THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, WESTRAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. III. OF VOL. I., 1931. LONDON, SATURDAY, JANUARY 17, 1931 Pp. 128—Price 1s.
No. 5603. Vol. CCXX. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 2

PRACTICAL PSYCHOTHERAPY.

THERAPY OF PERSONAL INFLUENCE.
By EDWIN HOPEWELL-ASH, M.D. An A.B.C. of Treatment by Personal Influence, Suggestion and Medical Hypnosis.
Obtainable from BM/ELHA, London, W.C.1. 2/9 post free.

ABDOMINAL SURGERY OF CHILDREN.
By L. E. BARRINGTON-WARD, Ch.M., F.R.C.S. (Edin.), F.R.C.S. (Eng.).
Pp. 300. 82 Illustrations, 3 Colour Plates. 15s. net.
"Should make a wide appeal alike to surgeon, general practitioner, and student."—BRITISH MEDICAL JOURNAL.
Oxford University Press, Amen House, Warwick-sq., London, E.C.4

FIFTH EDITION. Pp. w. 251. With Coloured Plate and 92 other Illustrations. Price 8s. 6d. Postage 6d.
REFRACTION OF THE EYE.
By ERNEST CLARKE, C.V.O., M.D., F.R.C.S.
The simplest book on Refraction, especially written for the General Practitioner.
"Can be recommended to the student as the very best on its subject."—BRITISH MEDICAL JOURNAL.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

NERVOUS INDIGESTION
By WALTER C. ALVAREZ, M.D.
8vo. 15s. net.
"The book deserves to be widely read, especially by those whose experience is slight or is limited to hospital practice."
—THE LANCET.
Wm. Heinemann (Medical Books), Ltd.,
99, Great Russell-street, London, W.C.1.

BY J. F. HALLS DALLY, M.A., M.D. CANTAB., M.R.C.P., Senior Physician to Mount Vernon Hospital.
HIGH BLOOD PRESSURE
Second Edition, Revised and Enlarged. Illustrated. 12s. 6d. net
LOW BLOOD PRESSURE
Its Causes and Significance. Illustrated. 15s. net.
Wm. Heinemann (Medical Books), Ltd., 99, Great Russell St., W.C.1.

OESOPHAGEAL OBSTRUCTION:
ITS PATHOLOGY, DIAGNOSIS AND TREATMENT
(Including four chapters on Cancer of the Œsophagus).
By A. LAWRENCE ABEL, M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to the Cancer Hospital, &c.
Pp. 245. 132 Illustrations. 2 Col. Plates. 30s. net.
"Masterful and complete. . . . Cannot be too highly praised."
—SURG. GYN. AND OBSTET. JOUR.
Oxford University Press, Amen House, London, E.C.4.

BY KENNETH M. WALKER, F.R.C.S., M.A., M.B., B.C.
DISEASES OF THE MALE ORGANS OF GENERATION.
Pp. 246. Coloured Plate and 78 Illustrations. 12s. 6d. net.
THE ENLARGED PROSTATE.
Pp. 212. Coloured Plate and 59 Illustrations. 12s. 6d. net.
MALE DISORDERS OF SEX. 5s. net. (Jonathan Cape.)
Oxford University Press. Amen House, London, E.C.4.

36s., postage 1s.
PURCHASE NOW for a Whole Year's Use.
THE
MEDICAL DIRECTORY
1931
Including Guide to British Spas and Marine Health Resorts.
Edited by R. FORTESCUE FOX, M.D.
TWO REVIEWS OF THE NEW ISSUE.
"*Once again we congratulate the publishers on the vigilance and enterprise which has produced something unique among the directories of the world.*"—THE LANCET, 6 Dec. 1930.
"*It is a volume for which one somehow feels affection, as well as admiration, because of its freedom from mistakes and misprints . . . indispensable and inimitable.*"—THE PRACTITIONER, January, 1931.
London: J. & A. Churchill, 40, Gloucester-pl., Portman sq., W.1.

EIGHTH EDITION. 224 Illustrations. 21s., postage 9d.
SURGICAL PATHOLOGY AND MORBID ANATOMY.
By Sir A. A. BOWLBY, K.C.B., K.C.M.G., Sir F. W. ANDREWES, O.B.E., F.R.S., and GEOFFREY KEYNES, M.D., F.R.C.S.
"*This is an ideal book for students, as it is clearly written, concentrates on the common conditions, and is admirably illustrated. There cannot be any doubt that it will fully maintain its reputation.*"
—THE PRACTITIONER.
London: J. & A. Churchill, 40, Gloucester-pl., Portman-sq., W.1.

DEEP X-RAY THERAPY IN MALIGNANT DISEASE.
By WALTER M. LEVITT, M.B., D.M.R.E., Radiotherapeutic Research Department, St. Bartholomew's Hospital. Introduction by SIR THOMAS HORDER, Bart., K.C.V.O., M.D., F.R.C.P.
With Diagrams. 10s. 6d. net.
London John Murray

DISEASES OF THE RECTUM AND COLON
AND THEIR SURGICAL TREATMENT.
BY
J. P. LOCKHART-MUMMERY
F.R.C.S.ENG., M.A., M.B., B.C.CANTAB.,
Senior Surgeon to St. Mark's Hospital.
Over Two Hundred Plates and Illustrations. Price 25s.
Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

THE THOMAS SPLINT AND ITS MODIFICATIONS IN THE TREATMENT OF FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B.(EDIN.).
Pp. 152. 85 Illus., with X-Ray Photographs, 3 Charts. 15s. net.
Oxford University Press, Amen House, London, E.C.4.

CANCER OF THE BREAST, AND ITS TREATMENT.
By W. SAMPSON HANDLEY, M.S., M.D.Lond., F.R.C.S. Eng.
Second Revised Edition. With 82 Illustrations. 30s. net.
Published for the Middlesex Hosp. Press by John Murray, London.

3 Volumes and Index

GRAHAM'S SURGICAL DIAGNOSIS

Now Complete

THE BRITISH MEDICAL JOURNAL says:

"*It is impossible, however, in a short review, to take each section separately; they are of a uniform excellence, and there is little to criticize in any of them. A bibliography at the end of each chapter is sufficiently extensive to guide those who wish to refer to particular articles, while in addition to the usual index at the end of each volume there is a separate index volume, which should save much annoyance when references have to be searched for. The publishers have also very wisely placed a small contents table on the covers, a plan which might well be adopted in all multi-volume works. We are used to copious illustrations in books of American origin, and these volumes are no exception; photographs and radiograms, as well as the simple line drawings, have reproduced well, and despite their profusion there are few if any, redundant or meaningless illustrations. The paper is good, and the type pleasant, while the binding has the strength necessary in a book of reference. Altogether this work can be very heartily recommended, since it presents the state of modern surgical knowledge in a very fair and unbiased manner; it will especially appeal to those who believe that surgery is a science as well as an art.*"

Three octavo volumes totalling 2750 pages, with 1275 illustrations and a separate Desk Index Volume. By 43 American authors. Edited by EVARTS A. GRAHAM, M.D., Bixby Professor of Surgery, Washington University, St. Louis. Per set: Cloth, £7 10s. net.

W. B. SAUNDERS COMPANY Ltd. 9, Henrietta Street, LONDON, W.C.2.

The Physician's Prescription Remedy

for

Asthma

is

Felsol

The Internal
Non-Narcotic Treatment

TO PHYSICIANS: Clinical Reports, Samples, Formula, and Literature post free on request to

BRITISH FELSOL CO., LTD., 15 CAROLINE STREET, W.C.1

TELEPHONE: MUSEUM 2855 TELEGRAMS: FELSOL, WESTCENT, LONDON.

VALENTINE'S MEAT-JUICE

The **Power** of **Valentine's Meat-Juice** to be **Retained,** to **Aid Digestion,** and to **Sustain** and **Strengthen** when **Other Food Fails** has been **Demonstrated** by **Hospital Physicians** and **General Practitioners.**

Pneumonia and Influenza

William H. Peters, M. D., *Admitting Physician Camp for Consumptives, State of Rhode Island, Providence, R. I.:* "VALENTINE'S MEAT-JUICE was the only nourishment retained by my five-year-old daughter during an attack of Pneumonia. She is still taking it and gaining strength. I consider that it saved her life and believe it to be the best product of its kind on the market."

Cavalier Dr. Enrico Ballerini, *Late Surgeon to the Hospital of Rome, Italy:* "I have used VALENTINE'S MEAT-JUICE in the treatment of patients and also personally after having been very ill with Influenza, and I must say it is an excellent tonic in conditions of great organic weakness. It is also very agreeable. I have prescribed it with the greatest satisfaction for convalescents and invalids restricted to a liquid diet."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY
Richmond, Virginia, U. S. A.

A-12

VALENTINE'S PREPARATION
NUTRIO DERMC
VOLUME 1 4/5 OZ.
MEAT JUICE
DIRECTIONS. Dissolve one teaspoonful of the Preparation in three tablespoonfuls of cold or warm water—boiling water changes the character of the preparation

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS.

No. 5603. LONDON, SATURDAY, JANUARY 17, 1931. CCXX.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

ADDRESSES AND ORIGINAL ARTICLES.

Nephrosis. By T. Izod Bennett, F.R.C.P. 115

Histology of Buccal Carcinoma in Relation to Prognosis and Radiosensitivity. By Ralph Phillips, M.S.—(*Illustrated*) 118

Trigeminal Neuralgia. Anatomy of "Hartel" Technique. By Leslie Morris, F.R.C.S.—(*Illustrated*) 122

Bismuth Oxychloride Ointment in the Treatment of Lupus Erythematosus. By R. M. B. MacKenna, M.R.C.P. .. 126

CLINICAL AND LABORATORY NOTES.

Actinomycotic Cerebrospinal Meningitis associated with Aural Actinomycosis. By L. W. Cann, M.B., and G. J. Hollis, M.R.C.S.—(*Illustrated*) 130

Mucocele of the Appendix Caused by Early Carcinoma of Cæcum. By J. B. G. Muir, F.R.C.S. 131

MEDICAL SOCIETIES.

West London Medico-Chirurgical Society: Malignant Disease of the Large Intestine..... 132

Royal Society of Medicine: Section of Neurology: Ætiology of Disseminated Sclerosis 134

Section of Psychiatry: The Structure of Neurosis 136

Section of Ophthalmology: Cataract from Exposure to X Rays.. 137

NEW INVENTIONS.

An Occluder for Squint. By A. Rugg-Gunn, F.R.C.S. (*Illustrated*) 131

REVIEWS AND NOTICES OF BOOKS.

Burns: Types, Pathology and Management. By George T. Pack, M.D., and A. H. Davis, M.D...138

Physiotherapy: Its Principles and Practice. By F. Howard Humphris, F.R.C.P., D.M.R. & E., R. E. Stuart-Webb, M.B., and others 138

Téléradiographie Stéréoradiographie. By L. Diocles 138

LEADING ARTICLES.

Disseminated Sclerosis and the Spherula Insularis 139

Professional Discipline in Panel Practice.... 140

Radium and Research.. 140

ANNOTATIONS.

Diet in Diabetes 142

Parliamentary Representation of the Universities.. 141

New Work on Filariasis... 142

Intravenous Antiseptics for Uterine Infection 143

Malarial Treatment of General Paralysis 143

Radiography of the Liver and Spleen..... 144

Regulation of Blood Donors in New York 144

A Committee on Nutrition 145

Work of the Ross Institute 145

Milk and the Growth of Children 145

The Therapeutic Uses of Iron 146

Staffing Municipal Maternity Homes 146

A POST-GRADUATE COURSE.

Motives and Mechanisms of the Mind. III.—How the Mind Works. By Dr. E. Graham Howe.—(*Illustrated*) 147

INDEX NOTICE.

The Lancet, Vol. II., 1930 170

SPECIAL ARTICLES.

Public Health in Local Legislation 153

United States of America: The Supply of Nurses.—Medical History at a University 155

Ireland: The Health of Belfast 155

Budapest: A Disciple of Zeileis 156

Australasia: A Report on Hospitals 157

Medicine and the Law: Doctor and Barrister: No Fusion..... 158

The Distribution of Radium: (1) In London.—(2) In the Provinces.. 159

PUBLIC HEALTH SERVICES.

School Medical Service in Ireland 160

Mental Hospital Reports.. 160

Infectious Disease in England and Wales.... 160

CORRESPONDENCE.

A Research Institute for Surgeons (Profs. S. Davidson and J. J. R. Macleod) 161

Coeliac Disease (Dr. J. A. Ryle) 161

Acute Myelogenous Leukæmia (Dr. Robert Hutchison) 161

Treatment of Lobar Pneumonia (Dr. Tom Anderson)..... 162

Sodium Amytal in Labour (Dr. J. Riddell) 162

Treatment of Quinsy by Laughter (Mr. Macleod Yearsley) 162

Pasteurisation of Milk (Col. C. Maddock) 162

Clinical Conditions associated with Achlorhydria (Dr. A. F. Hurst) 163

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force.—Indian Medical Service.—Commissions in the Royal Army Medical Corps 163

OBITUARY.

James A. Adams, F.R.F.P.S. — (*With Portrait*) 164

M. Fitzmaurice-Kelly, F.R.C.S. 165

PANEL AND CONTRACT PRACTICE.

Alleged Irregular Prescribing.—Disciplinary Procedure..... 165

MEDICAL NEWS.

University of Cambridge.. 166

Royal College of Surgeons of England 166

University of Liverpool... 167

University of Glasgow 167

Salaries in Essex 122

The Merseyside Voluntary Hospitals 141

Enlargement of Chippenham Hospital 158

Extension of Newcastle Victoria Infirmary 158

Royal Automobile Club Hospital Fund 159

Extension of Westmorland County Hospital 163

Royal Sanitary Institute . 167

The Huxley Lecture..... 167

The National Diet 167

Harveian Society of London 167

Lister Institute of Preventive Medicine 167

Medical Society of Individual Psychology 167

Post-graduate Course in Tuberculosis..... 167

British Empire Cancer Campaign 167

Donations and Bequests .. 167

Paulton Isolation Hospital 168

NOTES, COMMENTS, AND ABSTRACTS.

Tropical Disease in Liberia 169

New Preparations: Sedicyl.—Dimol Pessaries.—Ephedrine .. 170

Medical Diary 167

Appointments 168

Vacancies 168

Births, Marriages, Deaths 170

J. & A. CHURCHILL

158 Illus. 18s. Post. 9d.

SURGICAL EMERGENCIES IN PRACTICE

By W. H. C. Romanis and Philip H. Mitchiner, Surgeons, St. Thomas's Hospital.

20th Ed. 262 Illus. 10s. 6d. Post. 5d.

MINOR SURGERY & BANDAGING

By Gwynne Williams, Surg., Univ. Coll. Hosp.

227 Illus. 15s. Post. 9d.

HUMAN PHYSIOLOGY

By F. R. Winton and L. E. Bayliss, Both of Physiol. Dept., Univ. Coll. Lond.

6th Ed. 364 Illus. 21s. Post. 9d.

JELLETT'S GYNÆCOLOGY

SHORT PRACTICE. Revised by R. E. Tottenham, Prof. of Obst. and Gyn., Hong Kong Univ.

London: J. & A. Churchill, 40, Gloucester Place, Portman Square, W.1.

OXFORD MEDICAL PUBLICATIONS

HISTOLOGY FOR MEDICAL STUDENTS

By **H. HARTRIDGE,** M.A., M.D., Sc.D., M.R.C.P., F.R.S.,
Professor of Physiology, University of London, at St. Bartholomew's Medical College;
and **F. HAYNES,** M.A.,
Demonstrator of Histology, University of London, at St. Bartholomew's Medical College.

Some of the subjects covered:—Histology of the Cell—Epithelia and Endothelia—Connective Tissues—Blood and Accessory Tissues—Muscles, Heart, etc.—Nervous Tissues—Nervous System—Organs of Special Sensibility—Respiratory System—Digestive System—Glands—Urino-Genital System.

Some features of special interest:—Microscopic and microtomic technique—Anatomical references—Tissue identification—Tissue culture and grafting—Intra-vitam staining—Micro-injection and micro-dissection—Blood-platelet enumeration—Reticulo-endothelial system—Differentiation of structure.

This book has been planned to anticipate and overcome the difficulties of the student. Thus, the illustrations (which all occupy full pages) have been so placed that the corresponding text is invariably opposite them—no searching back or forth is needed. The magnification and staining method used for each specimen is indicated, and a list is given of the staining reactions exhibited by all classes of tissues.

The index of 30 pages, each in two columns, calls for special mention, as it is also in part a glossary, giving a direct rendering of technical terms into commoner language, and vice versa.

A system is described whereby the student may keep constant watch on his own progress and simultaneously study his specimens and test his powers of identification. The authors' practical experience of examinational requirements in English schools of medicine has enabled them successfully to take a middle course between undue compression and the inclusion of unnecessary matter.

Pp. 416. Over Five Hundred Original Illustrations in Colour. **15s.** net.

A New (Fourth) Edition of
A TEXTBOOK FOR NURSES
Anatomy, Physiology, Surgery, and Medicine

By **E. W. HEY GROVES,** M.D., B.Sc., F.R.C.S.,
Surgeon to the Bristol General Hospital; Professor of Surgery, University of Bristol; Examiner in Surgery, Royal College of Surgeons, England, and the Universities of London, Leeds, Liverpool, and Sheffield; and
The late **J. M. FORTESCUE-BRICKDALE,** M.A., M.D. (Oxon), M.R.C.P. (Lond.)

The Medical Section revised by
J. A. NIXON, C.M.G., M.D. (Cantab.), F.R.C.P. (Lond.), Professor of Medicine and Director of Clinical Medicine in the University of Bristol; Physician to the Bristol Royal Infirmary; Consulting Physician to Southmead Hospital, Bristol; formerly Examiner in Medicine at the University of Cambridge, the Royal College of Physicians of London, and to the General Nursing Council.

Pp. 671. 229 Illustrations. **20s.** net.

COMPLETE CATALOGUE SENT ON REQUEST.

Oxford University Press

HUMPHREY MILFORD. Amen House, Warwick Square, London, E.C.4.
Telephone: CITY 2604. *Telegrams:* FROWDE, CENT., LONDON.

ADDRESSES AND ORIGINAL ARTICLES

NEPHROSIS.*

By T. Izod Bennett, M.D., F.R.C.P. Lond.,

PHYSICIAN TO OUT-PATIENTS, MIDDLESEX HOSPITAL, AND PHYSICIAN TO THE ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

Immediately after the war the attention of medical men in this country interested in nephritis was directed to publications by Albert Epstein of New York,[1] describing a group of cases of nephritis with œdema in which he had found the prognosis to be good, and in which he claimed that cure of the œdema could be brought about by the employment of diets abundant in protein together with the administration of thyroid extract. At much the same time there appeared work by a number of German observers of whom Munk,[2] Volhard, and Fahr[3] were the principal. This emphasised the importance of a group of cases usually included amongst those labelled as Bright's disease, but in which the histological lesions were confined to the tubules, and were purely degenerative in character. To these cases the name "nephrosis," originally suggested by Müller,[4] was given.

As time has gone on Epstein and his followers in America, and others elsewhere who have become interested in these cases, have adopted the word "nephrosis," with variations such as lipoid nephrosis, chronic nephrosis, or essential nephrosis, to include the cases indicated above. Much confusion has ensued because more common examples of Bright's disease characterised by œdema in conjunction with raised blood pressure and nitrogen retention have been referred to as "nephritis of nephrotic type" or by similar terms, and at the same time many pathologists have taken exception to any classification which implies that degeneration is anything other than the first stage of ordinary inflammation.

To-day, this confusion is tending to disappear, and it is becoming recognised that a group of cases does exist according closely with the original views of the American and German workers. It is, however, very important to define with exactitude the points which permit of any case being included under this head. Certain clinical, biochemical, and pathological features must be present, and certain others must definitely be absent. These are included in the following table, in which the positive and the negative findings are clearly separated.

Characteristics of Nephrosis.

	Positive.	*Negative.*
Clinical ..	Albuminuria + + +. Œdema (lipoids in urine + −).	Normal blood pressure and heart. Normal retinæ. No hæmaturia. No epithelial casts.
Biochemical ..	Increased blood cholesterol. Diminished plasma proteins. Reduced basal metabolic rate.	Blood-urea, chlorides, &c., normal.
Pathological ..	Degeneration of renal tubules (lipoid infiltration).	Normal glomerul and vessels.

Considering the general features indicated by this table, it is clear that the most important points are: (1) that the case must exhibit œdema and albuminuria, and (2) that there must be no evidence whatsoever of involvement of the cardiovascular system.

About a year ago a closely reasoned paper was published by Christian,[5] who called attention to the extreme rarity of post-mortem records supporting the conception of "nephrosis." He was able to collect only about 20 cases from the world's medical literature, and the general trend of his review was to throw considerable doubt on the existence of the disease as a separate entity. Some of the American supporters of the conception have explained the rarity of post-mortem material by suggesting that the disease is so benign that complete recovery is usual, but with such a view I cannot personally agree, since in my experience complete recovery is very rare.

At the time when Christian's review was published, a case typical of nephrosis was under my care in the Middlesex Hospital, and within six months I was able to follow a further case almost from the start of the disease until its fatal termination. The full details of these cases are being published, and it is noteworthy that during the last 12 months details of about 15 other cases have appeared in print in the world's literature, the most recent being those of Van Slyke and others.[6]

A Typical Case.

The following is a brief description of a case recently under my care:—

A man, aged 35, came to me for advice concerning swelling of his legs accompanied by albuminuria. Pitting œdema was present in both legs to just below the knees. The urine became almost solid on boiling, but otherwise no abnormal feature of any sort could be discovered. The optic fundus, the heart, the blood pressure, were all quite normal. Blood analysis gave normal figures for urea and non-protein nitrogen, calcium, phosphorus, &c., but the cholesterol stood as high as 300 mg. per 100 c.cm. and the plasma-proteins were reduced, the reduction being greatest in the serum albumin.

Close inquiry into the past history revealed no serious illness of any sort. The Wassermann reaction was negative. Swelling of the ankles had been noticed periodically for a few weeks on several occasions during the previous twelve months and had been continuously present for two months before I first saw him.

After he came under my observation he remained at work and reported to me at hospital twice weekly for many months bringing with him on most occasions a suitcase containing all the urine passed for 48 hours. In this way we were able to estimate the amount of albumin he was losing, and this amounted on the average to 15–20 g. per diem. It has not always been sufficiently realised how enormous is the total of albumin lost by these patients. The white of one egg contains approximately 6 g. and it is clear that a patient such as the one at present described may lose the equivalent to 5, 7, or even 12 whites of egg daily. Such a loss must before long exercise a profound effect on the circulating blood.

The patient was encouraged to take full amounts of protein in his food, particularly the vegetable proteins such as have been advocated by Epstein. His diet was kept as free of salt as possible, and he was given increasing doses of thyroid extract until he was taking grs. 60 daily; an increasing pulse-rate prevented the dose being pushed higher than this. In spite of this treatment œdema steadily increased, and before long the scrotum and penis and abdominal wall were involved, ascites was present, and there were physical signs of double hydrothorax. The patient was still at work but had put on 3 st. in weight, and was in such a condition that when he had been seated at his desk for a few hours he was obliged to massage his legs before he could straighten his knees.

He was then admitted to hospital. His condition was the same, there still being no change in the blood pressure and the blood chemistry remaining normal except for hypercholesterolæmia, and marked lowering of the plasma-proteins. He was given a series of intravenous injections of salyrgan, but even full doses of this drug did not increase the output of urine, which remained in the region of 600 to 800 c.cm. daily. After being in hospital about 14 days, he developed pain in the abdomen, the temperature rose, he

* A lecture delivered before the Fellowship of Medicine in November, 1930.

became delirious, the abdominal wall showed discoloration, and in 48 hours he was dead from a pneumococcal infection of his œdematous tissues.

The post-mortem examination revealed a heart of normal size, and kidneys somewhat enlarged by œdema, which on microscopic section showed lesions of a degenerative nature and confined to the tubules. The glomeruli appeared perfect.

Such is a classical example of "nephrosis." It may be asked why I have not used the term "lipoid nephrosis," nor alluded with more emphasis to this aspect of such cases. Cholesterol is almost always present in excess in the blood of these patients, but it is also present in the blood of many cases of nephritis exhibiting both œdema and cardiovascular change. It is not a feature of nephrosis alone, as far as we know; the observations of Maxwell [7] and of Gainsborough [8] seem to bring this out clearly. The "myelin" kidney, described by Kaiserling and Orgler,[9] McNee,[10] and others, is a greasy kidney loaded with lipoids, but is not necessarily from a case of nephrosis; it may be recovered from other types of nephritis, always with œdema, but sometimes with cardiovascular and marked glomerular change. Too much emphasis should not therefore be laid on this aspect, although it is an important feature of the biochemistry.

Ætiology and Prognosis.

The case which has been described is typical of many which have been recorded in the literature; but it should be noted that in many others some important ætiological factor can be traced. Thus, the cases originally described by Müller and Munk were nearly all of syphilitic origin, and it is common knowledge that in the days when syphilis was prevalent, many cases of intense albuminuria and œdema were observed which recovered complete health under treatment of the specific infection. Other cases of nephrosis appear to be of tuberculous origin, and amyloid disease appears to be essentially similar in many of its features. When this has been said, there remains at present nothing further to tell concerning the ætiology of this condition, and in many, perhaps the majority, of all the cases no ætiological factor of any kind is at present discoverable. Perhaps the most important negative fact to remember being that a history of severe scarlet fever or of recurrent tonsillitis always makes it probable that a case belongs to the category of glomerulo-tubal nephritis rather than nephrosis.

As regards prognosis, it would seem that the optimism of the German and American observers, which is evident in the first descriptions of nephrosis, is not justified by the experience of their successors. A proportion of cases in childhood appear to make complete recovery, but unless an ætiological factor, such as syphilis, is discovered and removed, one must remain doubtful as to permanent cure for a very long time indeed.

Importance of Nephrosis.

It may be asked why, if these cases are rare, they are so important. In the first place they are probably much commoner than is usually supposed; many pathologists say that they have never seen an example, the paper by Christian, to which reference has already been made, suggests an almost extreme rarity, and yet in the last 12 months the number of recorded cases has increased by over 50 per cent. Further, we must acknowledge that in the experience of many people, cases conforming clinically to this description are known to recover in a certain proportion and so escape observation by pathologists. We cannot therefore dismiss the group merely on the grounds of rarity.

But apart from this they have great importance as indicating a definite subdivision in the classification of Bright's disease. That great medical scientist, in his "Reports of Medical Cases," focused the attention of the world on the association between dropsy, disease of the kidneys, and albuminous urine. He called attention to cases with great renal degeneration and to others with granulation of the kidneys, but although he distinguished three main types, he clearly stated that he was unable to decide whether these represented different diseases or stages of the same malady. In the epoch following Bright, an endeavour was made to distinguish two main types, termed respectively "parenchymatous" and "interstitial" nephritis. These words remain too frequently in the nomenclature, for it is common knowledge that it is exceedingly difficult histologically to demonstrate a case with pure parenchymatous inflammation and no interstitial lesions, whilst in cases of so-called interstitial nephritis there is always considerable change in the epithelium of the organ.

A great advance was made during the nineteenth century when Gull and Sutton [11] separated off the group which they called "arterio-capillary fibrosis"; this is the group which is becoming known to-day as ischæmic nephritis, and is recognised as a late result of primary hypertension, the sclerosis of the kidney being secondary to vascular changes. It is generally agreed that in such cases death is far more often the result of cerebral hæmorrhage or cardiac failure than of renal failure.

But even with the recognition of the ischæmic or arterio-sclerotic group as a separate entity, there remained a heterogeneous group of cases classed as Bright's disease, in which clear separation into parenchymatous and interstitial subdivisions was not possible, either clinically or pathologically.

The next attempt at classification arose from the brilliant investigations of Widal and his school in France, who revived interest in the blood chemistry and drew attention to the importance of the nitrogenous constituents of the blood as affording an index of approaching uræmia. Widal [12] endeavoured to set up a "functional" classification of nephritis, dividing cases into those in which nitrogen-retention was conspicuous, and those in which he believed retention of chlorides to be the outstanding feature, with œdema as a consequence. This classification has not stood the test of critical inquiry. It is perfectly true to-day to say that, in cases of renal disease with œdema, chloride taken by mouth tends to make the œdema increase, but we know that this is not due to any impermeability of the kidney to salt, but is rather the effect of a "pre-renal deviation" of water and crystalloids from the blood plasma into the tissue spaces. A similar phenomenon occurs in cardiac œdema, and therefore we are unable to give support to the hypothesis that there is a variety of renal damage in which the excretion of chloride is prevented in a manner analogous to the failure of urea excretion in cases of renal sclerosis.

Subdivisions of Bright's Disease.

The classification of nephritis which appears tenable to-day is that which recognises an *acute glomerular inflammation* as the initial lesion in the vast majority of cases. We recognise acute nephritis as a disease which essentially damages the glomeruli and chronic nephritis leading to secondary contraction of the kidney is a late consequence of such initial trouble. This group, which may be subdivided according as the initial damage to the kidney is diffuse in type or

focal in character, affecting certain groups of glomeruli only, includes the forms of nephritis occurring with infectious fevers, tonsillitis, and so on.

Next we recognise the primary arterial group, first described by Gull and Sutton, usually spoken of to-day as *ischæmic nephritis;* a group in which primary hypertension is the first manifestation of disease and in which cerebral hæmorrhage or cardiac failure are far more often the cause of death than is uræmia. In such cases a sclerotic kidney is always found at autopsy, but although this shows extensive destruction of the organs on microscopic examination, it is unusual for such destruction to have progressed sufficiently to cause death before either the rupture of a cerebral blood-vessel or failure of the heart muscle has interrupted the life of the patient.

And now we have *nephrosis* as a third member in the group constituting Bright's disease. I have already indicated its characteristics, and it is essentially the fact that the primary lesion is a degeneration of the tubules which enables us to put it forward as a separate entity.

The Production of Œdema.

But there is a further reason which makes the recognition of nephrosis important—namely, the light which this conception throws on the mechanism of œdema.

Admitting that glomerular nephritis is often responsible for œdema, it is nevertheless a fact that cases of nephrosis exhibit the so-called "renal" œdema in its most uncomplicated form. In nephrosis the known lesions are relatively simple, being practically confined to the renal tubules. The symptoms are few, being merely albuminuria and œdema, and the blood chemistry exhibits no changes save an excess of cholesterol and reduction of the plasma-proteins. Accepting these facts, it becomes probable that the œdema of these cases is the direct result of the loss of protein from the blood plasma which follows the intense and prolonged albuminuria.

Generalised œdema, such as we see in the medical wards of our hospitals, is the result of passage of water and salts through the capillary walls into the tissue spaces. In such cases increased permeability of the capillary wall may sometimes be present, but even if this factor is important, it is necessary for certain forces to be in action in order to bring about the passage of fluid into the tissue spaces. These forces are many and complicated, but two of them are of outstanding importance—namely, the capillary blood pressure and the colloid osmotic pressure of the plasma-proteins. Of these forces the capillary blood pressure depends to some extent on the general blood pressure, but only to a limited degree because the capillary blood pressure is constantly controlled by the vasomotor system. Capillary blood pressure is, on the other hand, liable to considerable variations through changes in pressure on the venous side. When cardiac failure or any other cause prevents the ready emptying of the veins, capillary pressure will be considerably increased, and in such circumstances we see œdema of the "cardiac" or "obstructive" type.

Turning to the second great force, the colloid osmotic pressure, it has been recognised since the pioneer work of Starling[13] that the molecules of protein in the plasma exercise a continuous osmotic force, tending to retain water and salts in the circulating blood. Fibrinogen has little power in this respect, globulin has more power, but it is essentially the albumin which exercises the greatest osmotic force. It has been calculated by Govaerts[14] and others, who have specially studied this side of biochemistry, that the albumin molecule exercises a colloid osmotic pressure six times as great as that of globulin. It is essentially this colloid osmotic pressure which is responsible for holding back water during the passage of the blood through the capillaries and for reabsorbing water from the tissue spaces when transudation has occurred. From this it follows that if for any reason the plasma-proteins are greatly decreased, the reabsorption of water will be impeded and the production of œdema notably facilitated, and this is what happens in the so-called renal œdema. The loss of albumin through the kidney into the urine is so great that we find the plasma-proteins diminished from their normal figure of about 8 g. per 100 c.cm. to 6, 5, or even 4 g. or less, and the diminution being chiefly at the expense of the albumin, there is a correspondingly enormous fall in the colloid osmotic pressure. This is the probable explanation of "renal" œdema and such observation of the concentration of plasma-proteins is an extremely important one in biochemistry and in clinical medicine which has been all too often neglected.

Recently, in conjunction with Dodds and Robertson,[15] I have been able to investigate a number of cases of œdema of obscure origin, and we have been interested to find that in many of them there is a notable lowering of the plasma-proteins. The cases we have so far investigated have chiefly belonged to two groups. In the first group there has been cirrhosis of the liver with the collection of large quantities of albuminous fluid in the peritoneum, but in addition there has been œdema of the arms and legs, and we believe that it is the loss of albumin from the blood into the peritoneum which has depleted the plasma-proteins to such an extent that a generalised œdema has followed. The second group has consisted of cases with extensive simple or malignant ulceration of the stomach, and in these again a generalised œdema with demonstrable lowering of the plasma-proteins has been due, according to our conception, to an initial loss of albumin from the blood, so lowering the colloid osmotic pressure that œdema has resulted.

These observations have but an indirect application to the subject of nephrosis, but the application is important because it has been suggested in some quarters that nephrosis is not a renal disease at all, but is a disorder of metabolism in which the albumin molecule of the blood plasma is so changed that it can escape through a normal kidney. It has further been suggested that such degenerative changes as are observed in the kidney are merely the result of a depleted blood plasma. Our observations on cases in which the blood plasma was lowered by loss of albumin into the peritoneum or alimentary canal show that in such cases no renal lesion became demonstrable, and it therefore seems that in nephrosis it is more logical to accept the microscopic changes in the kidney as evidence of damage which allows the escape of serum-albumin as a consequence.

These observations on the plasma-proteins have yet a further application because they indicate the unsatisfactory nature of the majority of forms of treatment at present adopted. It is clear that to promote diuresis is not by itself an action tending to cure because the mere extraction of water from the tissues will leave the blood plasma as poor in proteins as before, and the only form of treatment which can be expected to cure is one which will prevent further leakage through the kidney, and restore the blood proteins to their normal condition. Diet is, therefore, very important, and even if our present knowledge is

insufficient to enable us to promote the creation of serum-albumin with any certainty, it is at least logical to keep these patients on a diet containing abundant protein which will supply them with the elements necessary to combat the constant loss of albumin which is the essential mechanism of their œdema.

REFERENCES.

1. Epstein A. A.: Jour. Exper. Med., 1914, xx., 334.
2. Munk, F.: Med. Klin., 1916, xii., 1019.
3. Volhard, F., and Fahr, T.: Die Brightsche Nierenkrankhlit, Berlin, 1914.
4. Müller, F.: Verhandl. d. Deut. Path. Gesells., 1905, ix., 64
5. Christian, H. A.: Jour. Amer. Med. Assoc., 1929, xciii., 23.
6. Van Slyke, D. D., Stillman, E., and others: Medicine, Baltimore, 1930, ix., 257.
7. Maxwell, J.: Quart. Jour. Med., 1928, xxi., 297.
8. Gainsborough, H.: Ibid., 1929, xxiii., 101.
9. Kaiserling, C., and Orgler, A.: Virchows Arch., 1902, clxvii. 296.
10. McNee, J.W.: Jour. Path. and Bact., 1922, xxv., 425.
11. Gull, W., and Sutton, H. G.: Med. Chirurg. Trans., 1872, lv., 273
12. Widal, F.: Jour. Méd. franç., 1911, iv., 18.
13. Starling, E. H.: Jour. Physiol., 1896, xix., 312.
14. Govaerts, P.: Presse méd., 1929, xxxvii., 1053.
15. Bennett, T. I., Dodds, E. C., and Robertson, J. D.: THE LANCET, 1930, ii., 1006.

HISTOLOGY OF BUCCAL CARCINOMA IN RELATION TO PROGNOSIS AND RADIO-SENSITIVITY.*

BY RALPH PHILLIPS, M.S. LOND.,

DEMONSTRATOR OF ANATOMY, ST. BARTHOLOMEW'S HOSPITAL.

THE treatment of malignant disease by radium has given a fresh impetus to the histological study of cancer, for many pathologists consider that the explanation of radio-sensitivity and radio-resistance is to be found in the histology of the cancer cell. Ewing [1] states that "the cure of carcinoma by radiation results from a nice adjustment between injury to tumour cells, ensuring their partial or complete necrosis, and injury to surrounding tissues, eliciting a reactive reparative inflammation which removes tumour debris and often destroys viable tumour cells." It can hardly be possible to obtain such a "nice adjustment" between radiation, cancer cell, and stroma reaction in the absence of a knowledge of the histology of each particular cancer under treatment. The present paper, therefore, is an attempt to find a histological explanation of the fact that local healing of carcinoma of the tongue is obtained in less than half the cases treated by irradiation. In order to have a firm background for such work it was first necessary to prove a relationship between the histology of buccal cancer and its clinical course.

If it be possible to classify with some constancy the degree of histological differentiation in a carcinoma, then it might perhaps be expected that such a classification would be correlated with events such as (1) the rate of growth of the tumour, (2) the duration of life from the detection of the growth, (3) the tendency to dissemination, (4) the time of appearance of metastases, (5) the results of operative treatment, and (6) the reaction to radiotherapy.

The life-history of a cell, like that of the whole organism, consists of reproduction (mitotic division), differentiation (changes in structure), and specialisation (development of function). It is a well-recognised biological law that there is an inverse relationship between the processes of differentiation and specialisation on the one hand, and the powers of reproduction on the other. Thus a carcinoma, increasing by geometrical progression without differentiation, will grow faster and be more malignant than one in which the cells undergo some degree of differentiation, with corresponding diminution in reproductive activity. The process of differentiation is a self-imposed brake (Broders [2]), and malignancy is dependent upon the relationship between the rate of growth and the degree of differentiation (MacCarty [3]).

Hansemann,[4] in 1893, first pointed out the relation of the histology of a cancer to its biology, and introduced the term "anaplasia" to describe the very cellular, embryonic type of growth; he thought also that the histology of a cancer was of more importance in its prognosis than any other single factor. These ideas of differentiation and anaplasia have been steadily developed by many pathologists, and were finally expressed in statistical terms by MacCarty and by Broders.[5] Broders's histological classification of an epithelioma depends upon the degree of differentiation it shows towards a normal squamous epithelium. The normal differentiation of a stratified squamous epithelium is from the cuboidal basal cells, through the polyhedral prickle cells and flat squamous cells, to keratinised cells; these last die to form the surface of amorphous keratin. So Broders describes a Grade 1 epithelioma as being from 75 per cent. to 100 per cent. differentiated, and 0 per cent. to 25 per cent. "dedifferentiated"; Grade 2 is 50 to 75 per. cent. differentiated, and 25 to 50 per cent. dedifferentiated; Grade 3 is 25 to 50 per cent. differentiated, and 50 to 75 per cent. dedifferentiated; and Grade 4 is 0 to 25 per cent. differentiated, and 75 to 100 per cent. dedifferentiated.

The embryonic type of epithelioma Broders calls completely "dedifferentiated," but, as Ewing [6] says, the idea of dedifferentiation is an unwarranted assumption and contrary to sound biological principle. For in biological phenomena irreversibility is the outstanding feature; that an organism or a cell should retrace its steps and travel backwards along the path of its life-history is difficult to believe. Thus anaplasia is a term more applicable to the physiological state and histological appearance of malignant cells.

Another criticism of Broders's classification is that a malignant growth is not uniform in structure throughout, and that therefore no single histological section is of value as an index of malignancy. I therefore specially investigated this point, and found that such a contention was completely untrue, at any rate for buccal carcinomata. Several growths were serial sectioned throughout, and in many two sections from different parts of the growth were taken; in every case uniformity of the growth was found. Further, the lymph gland metastases were in nearly every case uniform in structure with the primary growth. It is, indeed, remarkable that the structure of a carcinoma is so rigid that its metastases reproduce not only its coarser but even its finest histological characteristics.

The Present Investigation.

The *material investigated* consists of all the cases of carcinoma of the lip, tongue, floor of mouth, tonsil, and palate treated in St. Bartholomew's Hospital from the years 1921 to 1927, so that three years at least have elapsed for the estimation of results; in addition, those cases treated by irradiation in the

* Part of a Thesis approved for the Degree of Master of Surgery in the University of London.

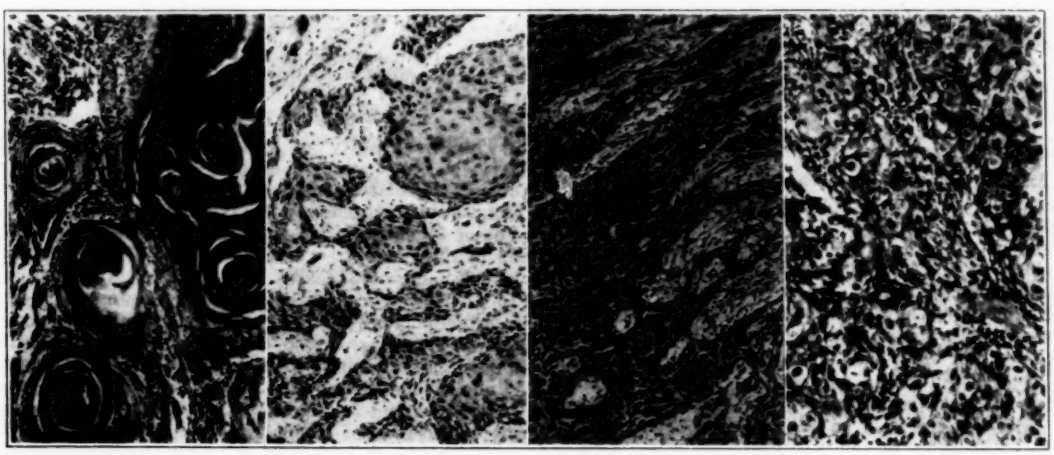
years 1928 and 1929 have been studied from the point of view of healing of the primary lesion. The material comprises, therefore, a totally unselected group of cases, treated by many different surgeons; so that the correlation between the histogenesis of the carcinoma and the fate of the patient is obtained independently of any personal factor in treatment.

Method of investigation.—All the available histological sections of carcinoma of the bucco-pharyngeal mucous membrane were collected and graded according to Broders's classification. The same was then done independently for the lymph glands where these had been removed and sectioned. Lastly, the clinical notes of the patients were abstracted, and cases where no pathological section had been taken were included for completeness. By the courtesy of Mr. Lionel Colledge I was able to study some of Broders's own slides before starting the investigation; I may add that I went over my first 100 slides independently a second time six months later, and as this second grading in 97 slides was identical with the first, Broders's method of classification is clearly both applicable and accurate.

Criteria of grading.—An epithelioma may consist of masses of cells of embryonic type without any arrangement or differentiation, with great variation in the size and shape of both cells and nuclei, with many mitotic figures and large deeply staining nucleoli, and abundant chromatin (Grade 4). Or its cells may resemble those of the basal layer of the normal epithelium and show some degree of alignment, but little or no differentiation towards prickle-cell formation; there is some variation in size and shape of cells and nuclei, and a fair degree of mitotic activity (Grade 3). Next the epithelioma may consist of collections of cells arranged with a basal cell layer at the periphery of each collection, differentiating into prickle cells and larger flattened squamous cells towards the centre, but without actual keratinisation of the squamous cells; the cells and nuclei are more uniform in size and shape, mitoses and large nucleoli are infrequent, and hyperchromatism is absent (Grade 2). Lastly, the growth may be almost wholly composed of well-formed cell-nests; the stimulus to differentiation has been much greater than that to reproduction, and most of the cancer cells have killed themselves in forming epithelial pearls (Grade 1). Table I. summarises these criteria of grading, and the microphotographs further illustrate a typical example of each grade. It may be remarked that the stroma is not considered in this histological classification. The meaning of the stroma reaction is obscure, and conflicting views are held; therefore it was decided to confine the investigation (at any rate in the first place) to the malignant cell alone.

TABLE I.—*Criteria of Grading.*

Grade.	Cell-nests.	Keratinised cells.	Squamous cells.	Prickle cells.	Variation in size and shape of cells and nuclei.	Mitoses.	Large nucleoli.	Hyperchromatism.
1	+ + +	+ + +	+ + +	+ + +	0	0	0	0
2	+	+	+ +	+ + +	+	+	+	0
3	0	0	0	+	+ +	+ +	+ +	+
4	0	0	0	0	+ + +	+ + +	+ + +	+ + +



Sections of epitheliomata to illustrate the four grades distinguished by Broders. × 90.

Results.

The total number of patients investigated is 319; 71 treated by radiotherapy have all been followed up for one year or more to discover the effect on the primary growth. Of the remaining 248, 208 have been followed up for three years or more. The 40 untraced cases and 8 post-operative deaths (out of 286 patients operated upon =2·8 per cent.) have been excluded from the follow-up results.

HISTOLOGICAL GRADE AND PRIMARY SITE.

For the purposes of this investigation certain primary sites were defined: (1) the dorsum and sides of the tongue, anterior to the circumvallate papillæ; (2) the floor of the mouth, with the under surface of the tongue and the lower alveolus; (3) the base of the tongue—i.e., posterior to the circumvallate papillæ; (4) the tonsils, pillars of fauces, palate, and upper alveolus, but excluding the maxillary antrum; (5) the lower lip; and (6) the upper lip and mucous membrane of cheek.

From Table II. it is seen that the histological grading agrees with the usual clinical prognosis. For example, 86·7 per cent. of carcinomas of the lower lip fall into Grades 1 and 2, and growths of the lower lip are recognised clinically as being relatively favourable. On the other hand, growths of the tonsillar region are clinically of very bad prognosis, and it is seen that 60·4 per cent. of these growths fall into Grades 3 and 4.

TABLE II.—*Relation of Primary Site to Histological Grade.*

Grade	1	2	3	4
Site.	Number of cases and per cent.			
Dorsum and sides of tongue, anterior to circumvallate papillæ	19 (22·4)	35 (41·2)	24 (28·2)	7 (8·2)
Under surface of tongue, floor of mouth and lower alveolus	4 (10·0)	21 (52·5)	12 (30·0)	3 (7·5)
Base of tongue	0 —	7 (53·8)	2 (15·4)	4 (30·8)
Tonsils, pillars of fauces, palate, and upper alveolus	1 (1·7)	22 (37·9)	27 (46·6)	8 (13·8)
Lower lip	11 (36·7)	15 (50·0)	3 (10·0)	1 (3·3)
Upper lip and inside of cheek	1 (6·2)	9 (56·3)	5 (31·3)	1 (6·2)

DELAY BETWEEN FIRST SYMPTOM AND TREATMENT.

It is a fair assumption that the rate of growth of a cancer is the main factor determining how soon the patient seeks treatment. In Grade 1 buccal carcinomas the interval between the patient's first symptom and his seeking advice was 7·5 months; in Grade 2, 6·0 months; in Grade 3, 5·6 months; and in Grade 4, 3·2 months. There is, therefore, a direct correlation between the histological grade of a buccal carcinoma and its rate of growth.

PROGNOSIS.

Cure.—Taking all sites together, there were 50 three-year cures out of 215 cases followed (23·3 per cent.). The percentage three-year cures in each grade are as follows: Grade 1, 34·8; Grade 2, 29·3; Grade 3, 16·3; Grade 4, 5·9. There were 21 five-year cures out of 125 cases followed (17·0 per cent.). For each grade the percentage five-year cures are: Grade 1, 33·3; Grade 2, 23·7; Grade 3, 10·3; Grade 4, 0·0. Each site taken separately shows similar results to the summarised figures given above, and it is seen that a patient with a Grade 1 buccal carcinoma has a one in three chance of being cured for three or five years, while a patient with a Grade 4 growth has only a one in seventeen chance of a three-year cure, and none at all of a five-year cure. There is, therefore, a direct correlation between the histological grade of a buccal carcinoma and the prospects of its cure.

Post-operative survival.—The average post-operative life of 169 patients who were followed from operation until death (including some who died without certain evidence of recurrence of the carcinoma) was 17·2 months. In each grade the post-operative life in months was as follows: Grade 1, 25·7; Grade 2, 18·5; Grade 3, 13·8; Grade 4, 10·7. The total duration of the disease (from the first symptom to death) shows a similar relationship to the histological classification. The duration in months was as follows: Grade 1, 32·7; Grade 2, 24·1; Grade 3, 18·5; Grade 4, 14·1; average of all cases, 21·8 months. It has therefore been shown that there is a direct correlation between this histological classification of buccal epitheliomata and (1) their rate of growth, (2) their prognosis as to cure, as to post-operative length of life, and as to the total duration of the disease. Table III. summarises these figures,

TABLE III.—*Relationship between Histological Classification and Clinical Course of Carcinomata of Buccal Cavity.*

Grade.	Cases.	Per cent. graded cases.	Average age.	Delay before treatment.	Fatal cases.		"Cures."	
					Post-operative life.	Total duration of disease.	Per cent. 3-year.	Per cent. 5-year.
			yrs.	mths.	mths.	mths.		
1 ..	36	14·9	61·7	7·5	25·7	32·7	34·8	33·3
2 ..	109	45·0	60·0	6·0	18·5	24·1	29·3	23·7
3 ..	73	30·2	59·5	5·6	13·8	18·5	16·3	10·3
4 ..	24	9·9	59·3	3·2	10·7	14·1	5·9	0
Not graded	77	—	60·1	5·4	16·6	20·0	21·6	12·8
Total and average	319	—	60·0	5·7	17·2	21·8	23·3	17·0

which are in agreement with those of Broders [5] and other workers.[7]

LYMPHATIC DISSEMINATION.

The uncertainty of clinical examination of the cervical lymphatic glands has prevented the finding of any correlation between the histological classification and the tendency to lymphatic dissemination. For of 59 cases with lymphatic metastases clinically, 22 (37·3 per cent.) were proved innocent microscopically; and of 31 cases with no clinical metastases, 16 (51·6 per cent.) contained carcinoma deposits microscopically. Lane-Claypon similarly found glandular metastases in over half the cases of carcinoma mammæ in which the axillary glands were clinically not involved.

Of 48 cases available for study, the glandular metastasis was of the same histological grade as the primary growth in 39; in 5 it was of a higher grade, and in 4 of a lower grade. These results agree with those of Patey and Scarff,[8] who found the grade of the axillary gland metastases to be the same as that of the primary mammary carcinoma in 86 per cent. of cases.

RECURRENCES.

The average interval between operation and recurrence in 108 cases was 8·5 months, and in each grade the interval was as follows: Grade 1, 9·5; Grade 2, 9·4; Grade 3, 9·2; Grade 4, 3·8 months. Since the nature and extent of the first operation have not been taken into account in these figures, it is perhaps not surprising that no well-marked correlation between the histological classification and the time of recurrence has been found; but, at any rate, it is seen that Grade 4 growths tend to recur very rapidly.

REACTION TO IRRADIATION.

There is general agreement that the more a tissue approaches an embryonic type, the greater is its radio-sensitivity (Dominici [9]), and that the maximum radio-sensitivity of the cell corresponds to the phase of mitotic activity (Perthes [10]). It is therefore to be expected that a histological classification of carcinomata, according to the degree of anaplasia and mitotic activity, would be correlated with their radio-sensitivity. Such a correlation has, in fact,

been obtained by some investigators, notably by Cutler [11] in carcinoma of the cervix uteri, and to a less extent by de Nabias and Forestier [12] in their karyokinetic index.

Table IV. compares the grade of the primary growth with its reaction to irradiation, and it is seen that

TABLE IV.—*Effect of Irradiation upon Primary Carcinoma According to its Histological Grade.*

Grade	1	2	3	4	Total and per cent.
Response of primary lesion to radiation	Number of cases and per cent.				
Healed	4 (50·0)	12 (40·0)	8 (40·0)	8 (61·5)	32 (45·1)
Improved	3 (37·5)	10 (33·3)	5 (25·0)	3 (23·1)	21 (29·6)
No effect	1 (12·5)	8 (26·7)	7 (35·0)	2 (15·4)	18 (25·3)
Totals	8	30	20	13	71
Average time of complete healing (in weeks)	11	10	19	8	12

there is no correlation whatever in the 71 cases investigated.

If radio-sensitivity is not dependent upon the degree of anaplasia of the malignant cell, perhaps it is correlated with the nature of the stroma, as Stanford Cade [13] maintains. Table V. compares the reaction

TABLE V.—*Response of Primary Lesion to Irradiation According to Degree of Round-celled Infiltration.*

Degree of round-celled infiltration.	Response of primary lesion to irradiation.			Total treated.	Total healed and imp. No. and per cent.
	Healed.	Improved.	No. effect.		
Dense	7	3	4	14	10 (71)
Moderate	8	11	5	24	19 (79)
Slight	11	3	5	19	14 (74)
None	6	4	4	14	10 (71)
Total	32	21	18	71	53 (75)

to irradiation of the primary growth with the degree of round-cell infiltration of the stroma, and again no relationship is found. It is not, of course, suggested that round-cell infiltration comprises the whole stroma reaction, but it is probably a good criterion, and it admits of fairly accurate estimation in the tissues. The histogenesis of an epithelioma, then, is correlated with all its biological expressions except its reaction to irradiation, but the following hypothesis would include this also.

Action of Radium on Epithelioma.

In vivo, there is general agreement that the action of radium on the cancer cell may be direct—i.e., a lethal effect on the cancer cell—or indirect. The latter, according to Dominici [14] and Clunet,[15] comprises in the epitheliomata (1) a latent phase of 5 to 16 days; (2) a phase of monstrous evolution—swelling of cell and nucleus, atypical mitosis, &c.; (3) a phase of diffuse keratinisation; (4) a phase of phagocytosis by polymorphonuclear and mononuclear cells; (5) a phase of fibrosis.

Alter [16] studied the histological changes in epithelioma of the cervix uteri after irradiation, and observed that some growths responded so rapidly that the dissolution of the tumour cells occurred before any cellular changes could be observed—in other words, a direct action of the irradiation. Other growths responded more slowly, and here the basal cells were destroyed, but the prickle cells keratinised in a normal manner, except that this keratinisation was accelerated by repeated small doses of irradiation.

The few cases in which I have been able to observe the changes in an epithelioma consequent upon irradiation have shown in a striking manner the rapid differentiation of the malignant cells into keratinised cells; these latter die and are absorbed by polymorphonuclear phagocytosis. Two cases in which lymphatic glands containing metastases were excised after irradiation showed that the metastases were of a lower histological grade than the primary growth—i.e., had undergone greater differentiation. Alter also observed these changes in lymphatic gland metastases after irradiation.

Thus the action of irradiation upon an epithelioma may be summarised as (1) the actively dividing cells (basal or embryonic type of cell) are destroyed by direct action, and (2) the differentiating, more adult type of cell is speeded up in its differentiation, becomes keratinised and so dies—that is, is destroyed by indirect action.

With regard to the effects of irradiation upon the stroma of a malignant growth, there is an equal division of opinion as to whether changes in the stroma are primary or secondary effects; in general, such changes can be interpreted as similar to the ordinary connective tissue changes by which any lesion in the body is healed.

If, then, irradiation kills some malignant cells and stimulates others to complete adult differentiation, the highly differentiated epithelioma and the very anaplastic one would react equally well to radiotherapy. The cells of the former, or Grade 1 carcinoma, would undergo complete differentiation beyond the point of reproduction. The cells of the latter, or Grade 4 carcinoma, would be killed directly. Thus the interaction of these two factors would explain why irradiation heals the same percentage of growths in each histological grade.

PRACTICAL APPLICATION.

The practical application of this hypothesis would require the coöperation of the pathologist and the radiotherapeutist. It has been suggested that the maximum direct lethal action of irradiation on the cell is obtained by a high intensity acting for a short time, while the indirect action is best obtained by a low intensity acting for a long time.

Now the varying proportions of actively dividing cells, prickle cells, and keratinising cells in an epithelioma can be assessed by Broders's classification, and the problem will consist of the determination of the best method of irradiation according to the histology of the cancer under treatment. If the healing of a Grade 1 carcinoma, consisting mainly of prickle and keratinising cells, requires the differentiation of these into fully keratinised elements, this result will be best obtained by a small dose of irradiation acting for a long time. As an example could be instanced the surface application of radium, the results of which have already been demonstrated in the effective treatment of cancer of the lip; epithelioma of this site is mainly a Grade 1 or 2 growth, and hence its ready healing by prolonged surface application as applied by Regaud and Quick. For Grades 2 and 3 growths, a moderate intensity for a moderate time would be suggested; or perhaps

better still would be combined X irradiation (to destroy the dividing cells) and radium (to stimulate differentiation of the prickle cells into non-cancerous keratinised elements). The anaplastic Grade 4 growths would respond to a high intensity for a short time, as by deep X ray therapy; X rays are also indicated for this type of epithelioma, because it has usually extended much more widely than clinical examination would suggest, so making difficult its efficient irradiation by radium implantation.

Summary.

1. The investigation comprises the study of 319 cases of buccal carcinoma from the viewpoints of histology and clinical course, and of 71 cases as regards irradiation response.

2. The accuracy and usefulness of Broders's histological classification of epitheliomata have been demonstrated.

3. A well-marked correlation between the histology and the clinical course of buccal carcinoma has been obtained. This correlation is found especially in (*a*) the post-operative length of life, (*b*) the total duration of the disease, and (*c*) the prospects of cure. These are increased the greater the differentiation of the carcinoma, and decreased the greater its anaplasia.

4. No direct relationship was found between the histology of buccal carcinoma and its response to irradiation.

5. A hypothesis is suggested to explain this apparent exception to the general correlation between the histogenesis and the biology of buccal carcinoma.

6. The possible use of this hypothesis in the radiotherapy of buccal cancer is suggested as enabling the most suitable method of irradiation to be applied according to the histology of the growth.

My thanks are due to the electors of the Luther Holden scholarship, during my tenure of which this work was done; to Mr. G. E. Gask and Dr. E. H. Kettle, professors of surgery and pathology at St. Bartholomew's Hospital, for their constant direction and assistance; and above all to Dr. H. H. Woollard, professor of anatomy at St. Bartholomew's, for many fertile discussions and continuous helpful criticism.

REFERENCES.

1. Ewing, J.: Amer. Jour. Roentgen., 1926, xv., 93.
2. Broders, A. C.: Arch. Path. Lab. Med., 1926, ii., 376.
3. MacCarty, W. C.: Surg., Gyn., and Obst., 1925, xli., 783.
4. Hansemann, D. P.: Studien über die Anaplasie der Zellen, Berlin, 1893.
5. Broders: Jour. Amer. Med. Assoc., 1920, lxxiv., 656; Ann. Surg., 1921, lxxiii., 141; Minnesota Med., 1925, viii., 726; Arch. Surg., 1925, xi., 1.
6. Ewing: Rep. Intern. Conf. on Cancer, London, 1928, p. 6.
7. Colledge, L.: Proc. Roy. Soc. Med., 1928, i., 157; Greenough, R. B.: Jour. Cancer Res., 1925, ix., 453; Healey, W. P.: Amer. Jour. Obst. and Gyn., 1928, xvi., 15; Quick, D.: Amer. Jour. Roentgen., 1929, xxi., 322; Simmons, C. C.: Surg., Gyn., and Obst., 1926, xliii. 377; Simmons, and Daland, E. M.: Ibid., 1922, xxxv., 766.
8. Patey, D. H., and Scarff, R. W.: THE LANCET, 1928, i., 801; 1929, ii., 492.
9. Dominici, H.: Quoted by S. Laborde, La Curiethérapie des Cancers, Paris, 1925, p. 82.
10. Perthes, G.: Ibid.
11. Cutler, M.: New England Jour. Med., 1929, cc., 517.
12. de Nabias, S., and Forestier, J.: Compt. rend. de la Soc. de biol., 1923, lxxxviii., 83.
13. Cade, S.: Radium in the Treatment of Cancer, London, 1929.
14. Dominici: Arch. Gén. Méd., 1909, cc., 473.
15. Clunet, J.: Tumeurs Malignes, Paris, 1910, p. 218.
16. Alter, N. M.: Jour. Med. Res., 1920, xli., 439.

SALARIES IN ESSEX.—As a result of prolonged negotiations between representatives of the British Medical Association and the chairmen of the Essex County Council and of its Public Health and Housing and Education Committees, an understanding has been reached as to the future action of the Council as to the salaries of its medical officers. As a result of this understanding, the Health Committee recommends that the salary of the county medical officer of health be increased from £1500 to £1600 as from April 1st next.

TRIGEMINAL NEURALGIA.

THE ANATOMY OF THE "HARTEL" TECHNIQUE.*

BY LESLIE MORRIS, M.D. MANCH., F.R.C.S. ENG.,
SURGEON, CITY SANATORIUM, LEICESTER; LATE SURGICAL REGISTRAR, ROYAL INFIRMARY, MANCHESTER.

TRIGEMINAL neuralgia is a progressive intractable disease. Its chief manifestation is a sudden, excruciating pain limited to the area of distribution of the trigeminal nerve. Although the pathology and ætiology of this complaint are still unknown, relief can be obtained by interruption of the nerve impulse in its course to the brain. This may be done by an intracranial operation or by an injection of alcohol, which destroys the function of the nerve through or about its foramen of exit from the skull. This paper does not deal with the relative merits of the alternative methods; both are skilled procedures and in each case the final success depends upon specialised study and practice.

The first operations (performed with success) were devised simultaneously by Hartley [1] and Krause,[2] who removed the Gasserian ganglion itself by a temporal route. With this operation there was a high mortality, and the removal of the ophthalmic division of the ganglion frequently caused injury to the cavernous sinus, and also led to a trophic keratitis. For these reasons Hutchinson [3] advocated a partial resection of the ganglion which left intact the ophthalmic division and the adjacent sinus. In 1898 Spiller,[4] as a result of a series of experiments, showed that division of the sensory root of the ganglion relieved the condition as effectively as removal of the ganglion with a lower mortality, no danger to the cavernous sinus, and less risk of keratitis. Since that date the division of the sensory root of the Gasserian ganglion has been practised with great success. At the present time Frazier [5] advocates a partial section of the root, and preserves the ophthalmic fibres, which he believes are morphologically distinct.[6] Adson,[7] on the other hand, preserves the motor root, because he believes that neuralgia affecting the ophthalmic division is more prevalent than is often thought. This is a difficult and serious operation, but can undoubtedly be regarded as successful. In the hands of the above surgeons the mortality is less than 1 per cent. and the relief certain. Few surgeons, however, have the time, opportunity, or enough cases to enable them to achieve this degree of proficiency. Because of this, alternative and simpler methods based on alcoholic injections have been developed, and it is the opinion of the writer that such methods give an equal chance of success with few dangers and no mortality.

The treatment by alcoholic injection falls into two groups. The one aims at a temporary destruction of the function of the nerve at its foramen of exit from the skull, the other at a permanent result by action on the Gasserian ganglion itself. The first group will not be considered in this paper, but it may be mentioned that the temporary relief obtained by the method is an important accessory, both as a means of diagnosis and treatment, to the more radical injection.

The second method depends upon the injection reaching the Gasserian ganglion by way of the foramen ovale. There are two routes, the horizontal transzygomatic one advocated in this country by

* Based on a paper read to the Society of British Neurological Surgeons, Manchester, 1927.

Harris,[8] and the ascending extrabuccal route which was perfected by Hartel in Germany.[9] In 1909 Harris, while attempting to block the mandibular nerve at the foramen ovale, noticed that the injection sometimes caused anæsthesia in all the branches of the ganglion. But it was not until the publication of Hartel's paper in 1913 that a more certain method of anæsthetising the ganglion was demonstrated. In this work Hartel established the necessary technique and made a great advance on the methods of his predecessors. Without a thorough knowledge of German it is difficult to appreciate the significance of Hartel's work, and for this reason the writer has worked out the whole technique from first principles. The results, which are detailed in the following pages, closely follow those of Hartel and generally confirm his conclusions; on the other hand, certain differences have emerged and consideration is given to their interpretation.

The Hartel Injection.

Hartel found that if a needle is passed through the foramen ovale in the plane of the axis of the Gasserian ganglion it reaches the skin near the angle of the mouth. He then retraced from the outside the course of the needle and, by inserting it about the level of the upper mid-molar tooth, traversed the tissues around the mucous membrane of the mouth (guided with a finger in the mouth) until the point of the needle reached the area of bone in front and to the outer side of the foramen ovale. This surface of bone he considered was so characteristically hard and smooth that it could be used as a landmark to the foramen, which was the first depression or irregularity met with on it in working the point of the needle backwards. In this way he showed that the foramen ovale, and in consequence the Gasserian ganglion, could be located with accuracy.

Anatomical Observations.

In order to obtain a safe and accurate manipulation by this method it is necessary to examine: (1) The anatomical relations of the needle. (2) The anatomy of the skull around the foramen ovale, and especially those points which would enable one to locate the foramen by palpation with the point of a needle. These relationships are dealt with in the following paragraphs. The results given are based on work performed on the one hand in the Anatomy Department of the University of Manchester, and on the other hand in the Museum of the Royal College of Surgeons of England.

STRUCTURES LYING IN RELATION TO A NEEDLE PLACED IN LINE FROM THE ANGLE OF THE MOUTH TO THE FORAMEN OVALE.

These were ascertained from a series of dissections performed around a needle placed in the above axis. Fundamentally it was found that the needle takes a route between two planes: an internal one, which is soft and flexible and consists of the buccinator muscle and the mucous membrane of the mouth; and an external one, which is resistant and is formed by the mandible and the muscles attached to it. It will be apparent that no structure of importance is likely to lie between two such mobile planes, and this is confirmed by dissection—the space being filled entirely by a pad of fat known as the "fatty ball of Bichat."

The course taken by the needle is as follows. First it pierces the skin and superficial fat for about a centimetre, then, after crossing the few fibres of the muscles of expression, it enters the fatty ball of Bichat and traverses it in its long axis for at least 3 cm. Finally, leaving the fat, the needle reaches the external pterygoid muscle, and pursuing an oblique course crosses it for the last centimetre to reach the foramen ovale. From this it is evident that there is little danger of injury to important structures in the direct path of the needle, and consideration must now be given to those which lie near the path.

1. The *facial artery* runs in the plane of the muscles of expression about 1 cm. external to the angle of the mouth. The needle should, therefore, always be inserted still more external to the artery, so as not to injure it. Similarly the facial vein, which runs just external to the artery, should be respected. It is obvious that infection of the vein and phlebitis extending to the cavernous sinus, although never yet recorded, would be most serious.

2. The *parotid duct* arches round the anterior border of the mandible and crosses the fatty ball of Bichat to reach the mucous membrane of the mouth. Its course crosses that of the needle at a right angle. On these occasions it may conceivably be pushed aside, as there is no record of its injury or a fistula resulting.

3. The *internal maxillary artery* may take one of two courses with almost equal frequency: one deep, the other superficial to the external pterygoid muscle. When it takes a superficial course it may be injured by the needle. If so, a hæmatoma forms at once. This can readily be stopped by pressure, and the needle must be removed and inserted in another plane. In one dissection the artery took a course deep both to the muscle and to the underlying mandibular nerve, a position perfectly safe from the standpoint under consideration.

4. The *middle meningeal artery* takes a course behind the foramen ovale and, as will be emphasised later, behind the sphere of action of the needle. In 5 per cent. of cases it replaces the small meningeal artery and goes through the foramen ovale, where it might conceivably be injured. This accident is again of no practical importance, since the hæmorrhage resulting would be extracranial, and an intracranial hæmorrhage or other injury has yet to be placed on record.

5. The *Eustachian tube.*—Hartel and others consider that there is danger to this structure if the needle is manipulated deep to the foramen ovale. Observations, however, reveal two important points. First, the Eustachian tube from mouth to ear takes a course upwards, backwards, and outwards, so that the needle running in a direction upwards, backwards, and inwards would tend to glide off the tube rather than to pierce it. Secondly, the tube takes an oblique course at least 1 cm. below the foramen ovale, and forms one side of a triangle with the base of the skull and the external pterygoid plate respectively as the other sides. From this, a needle which passes deep to the foramen ovale would engage in the tissues in this triangular space and so ride above the tube. For these reasons I do not consider that the Eustachian tube is liable to be injured during these manipulations.

6. The *mandibular nerve* was found to take a course directed downwards and backwards, forming an angle of nearly 90 degrees with the external pterygoid plate. This is important when the nerve is to be located by the horizontal route through the sigmoid notch. It is evident that, unless the nerve is located at the foramen ovale itself, any other manipulation is useless. Furthermore, the nerve may run deep to the accessory ossifications in this region, and at a depth which makes its safe infiltration with alcohol impossible.

One may say, therefore, that the structures lying near to the path of the needle are unlikely to be injured, and also that no harm will result if they are actually pierced. The path of the needle itself is almost entirely through fatty tissue, and the internal maxillary artery is the only structure of importance which may occasionally lie in the direct path of the needle and in that event cannot be avoided.

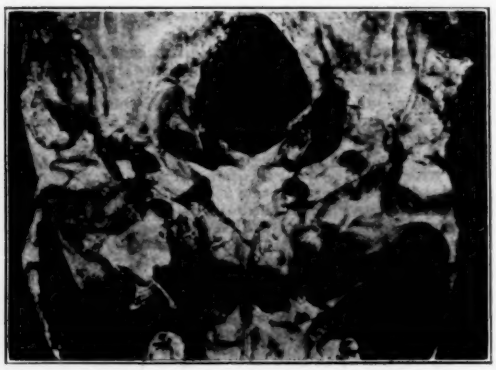
THE FORAMEN OVALE AND ITS LOCALISATION.

An examination of the base of the skull shows that nothing of importance lies antero-external to the foramen ovale, whereas postero-internal lie many vital structures (Fig. 1). Hence it is advisable that any manipulation of the needle in these operations should be made in the former area. Hartel himself emphasised the fact that, if a needle is guided on to the infratemporal surface of the temporal bone, a surface smooth and hard, careful manipulation

backwards would detect the foramen ovale as the first irregularity on that surface. On the other hand, Purves-Stewart [10] pointed out the value of the external pterygoid plate as a guide.

The following is a summary of my own observations and deductions on the above factors, made independently of the publications of these authorities

FIG. 1.



Base of skull, showing relations of the foramen ovale.

OBSERVATIONS MADE IN AN EXAMINATION OF 200 SKULLS.

1. The *foramen ovale* is never absent. It varies in size and shape, and in 2 per cent. of cases is so small as to make penetration by a needle impossible.

2. The *foramen spinosum* in 4½ per cent. of cases is small or absent. On these occasions it is probable that the middle meningeal artery goes through the foramen ovale.

3. The *infratemporal surface of the sphenoid bone* is smooth and hard. In two cases it was irregular, and in these a fossa was present large enough to be mistaken for the foramen ovale. When this occurs, localisation of the foramen is practically impossible (Fig. 2).

4. The *external pterygoid plate* is a muscular process, and as such is irregular in shape. For practical purposes, however, it may be considered to be rectangular. It is triangular or receding in shape in 6 per cent. of cases, and either very narrow or very broad in 2 per cent. The interest in this plate is the relation of its base to the foramen ovale. The base usually lies immediately in front of the foramen, but when the plate is very narrow this relation does not hold good, and the plate may be as much as 1 cm. in front of the foramen. The relation also may be considered to be inconstant when the border of the plate recedes. At the base of the external pterygoid plate there are accessory attachments of the external pterygoid muscle, and these may become ossified. Of the two types of ossification which have been described by Mackay [11] (Fig. 3):—

(*a*) The *pterygo-sphenoid* is a small ridge of bone which runs from the base of the external pterygoid plate on to the infratemporal surface of the sphenoid bone. It occurs with a 1 per cent. frequency only, and is not of importance.

(*b*) The *pterygo-spinous* is a more marked ridge of bone. It may be either complete or incomplete, and extends from halfway up the margin of the external pterygoid plate to the spine of the sphenoid. The writer found that this bridge of bone may take one of two positions; either deep or superficial to the spine of the sphenoid, and in consequence deep or superficial to the foramen ovale, the frequency being 5 per cent. and 1 per cent. respectively. Thus, in the greater percentage of cases, this ossification, which seemingly is in such intimate relation with the foramen ovale, is deep to it and is actually out of the area of manipulation with the point of the needle.

It has now been shown that the infratemporal surface of the sphenoid bone is consistently smooth and hard, and that the base of the external pterygoid plate is in constant relation to the foramen ovale. The conclusion is drawn that the foramen ovale is best and most safely located if use is made of both these points and the depth of the foramen is estimated from the foramen surface, and its position backwards from the latter plate. The technique of injection based on this will be described in detail elsewhere.

The 400 observations made by the writer show that this method would have resulted in failure only to the following extent, and for the reasons stated:—

	Times.	Per cent.
1. A small foramen ovale	8	2
2. A superficial pterygo-sphenoid ossification	4	1

and there would also have been difficulty to the following extent and for the following reasons:—

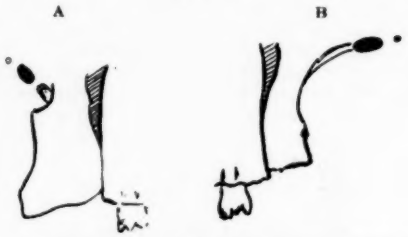
	Times.	Per cent.
1. A narrow external pterygoid plate	4	1
2. A fossa on the infratemporal surface of the sphenoid bone	2	½
3. The presence of an accessory ossification	20	5

The injections performed at autopsy, as detailed below, will be seen to confirm these figures.

OBSERVATIONS MADE AS A RESULT OF INJECTIONS PERFORMED AT AUTOPSY.

These were made from a series of 100 injections, 51 of which, including any case in which difficulty was experienced, were confirmed and recorded after removal of the skull cap. The other 49 were so

FIG. 2.



External pterygoid plate. (A) Fossa at base: (B) receding type.

straightforward that such confirmation was not carried out. The technique used was that of Hartel. The skin puncture was made 1–2 cm. lateral to the angle of the mouth, or 2–3 cm. above this point, the former being referred to as the "vertical" type, the latter as the "horizontal" type. The point of the needle was guided between the buccinator muscle and the mandible on to the infratemporal surface of the sphenoid bone, and with the aid of this surface and of the adjacent external pterygoid plate the foramen ovale was localised.

In the 51 recorded cases:—

(*a*) The ganglion was accurately located in 47.

(*b*) Difficulty was experienced in five, and only when the more horizontal injection was performed.

(*c*) The dura was pierced twice, and with the vertical injection only.

(*d*) The sphenomaxillary fissure was reached on one occasion, and the error recognised and corrected at the time.

(*e*) Failure occurred in four cases, 4 per cent. of the whole series.

The causes of failure were: (1) A depression which was present on the infratemporal surface of the sphenoid bone. The piece of bone was removed for examination and this depression was found to lie just in front of the foramen ovale, and to resemble it in size and shape. The foramen itself was normal, but it was impossible to ignore the irregularity lying in front of it (Fig. 2). (2) A foramen ovale too small to admit the point of the needle. (3) and (4) Fibrosis round the foramen too dense to pierce unless undue force was used.

(*f*) When inside the skull, the needle lay in the axis of the third division of the ganglion and, if pushed in further, reached the sensory root of the ganglion. In five cases only

did it tend to approach the second division, and in these cases it ran under the division.

The motor root of the ganglion was in all cases untouched (Fig. 4).

Discussion.

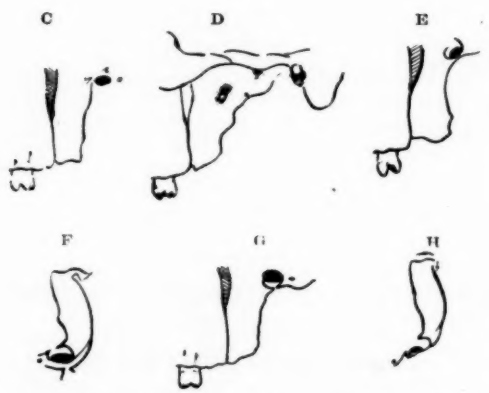
Evidence has accumulated during the course of the present investigation to suggest that what is called "injection of alcohol into the Gasserian ganglion" does not describe what actually happens, and that the alcohol affects the sensory root of the ganglion more than the ganglionic tissue itself.

This evidence may be outlined as follows:—*Anatomical:* (*a*) The planes in which the ganglion and its division lie; (*b*) the shape and character of the foramen ovale; (*c*) the plane in which the needle runs; (*d*) the attachments of the dura mater to the ganglion. *Experimental:* The course seen to be taken by dyes injected into the region of the ganglion. *Clinical:* (*a*) The areas of anæsthesia following injection; (*b*) the interpretation of the nerve paralyses following injection.

ANATOMICAL EVIDENCE.

(*a*) Within the middle fossa of the skull there is a groove on the petrous portion of the temporal bone over which runs the sensory root of the Gasserian ganglion. The ganglion itself, lying in a continuation of the groove, is really formed by the convergence of its three divisions. Of these divisions the third is seen to be in direct continuity with the sensory root and leaves the skull at the foramen ovale; the first forms an angle of almost 60 degrees with the third and takes a horizontal course to the sphenoidal fissure; the

FIG. 3.



External pterygoid plate with accessory ossifications. (C) Pterygo sphenoid. (D) Pterygo-spinous: complete deep; (E) complete superficial; (F) partial superficial (from within); (G) partial deep; (H) partial deep (from within).

second lies between the two, nearer and on a similar plane to the first division. In other words, the first and second divisions of the ganglion do not lie in continuity or in the same plane as the sensory root, whereas the third division may be considered to do so.

(*b*) The foramen ovale is a channel in the sphenoid bone for the passage out of the skull of the third division of the ganglion. It may be regarded as a cylinder, and from its formation its axis is that of the nerve and, therefore, that of the sensory root.

(*c*) Thus, a needle entering the foramen ovale by the Hartel route (i.e., in the axis of the ganglion) will tend to take a natural route through the central axis of the foramen, along the third division to the ganglion, and then into the sensory root itself—a deduction confirmed by injections on the cadaver.

Variations from this central route do occur, but are not common, and in most cases can be avoided. The variations are as follows. When the axis is more vertical than usual, the needle may reach the dura mater, cerebro-spinal fluid is seen to escape, and the

FIG. 4.

Dura mater reflected to show Gasserian ganglion with wire representing needle in situ (x—x).

error can then be rectified. When it is more horizontal its course is limited by the shape of the foramen, and it is almost an anatomical impossibility to take a course deep to the nerve and in relation to the periosteum. A lateral deviation of the needle is possible, and may account for some of the irregular results obtained in these cases. The medial deviation, because of the direction of the needle, is impossible.

From this it may be suggested that, if the most horizontal direction in which the needle will pierce the foramen is aimed at, the cylindrical shape of the foramen makes it almost a certainty that the correct axis will be maintained. In these cases the sensory root can actually be reached with the point of the needle without danger.

The series of 51 Hartel injections (performed at autopsy) gave the following comparative results:—

1. In 21 "*vertical*" injections: No difficulty was experienced; the dura was pierced twice; the point of the needle deviated five times from the axis of the sensory root.
2. In 30 "*horizontal*" injections: Difficulty was experienced five times; the dura was never pierced; the axis of the sensory root was always maintained accurately.

These results indicate that it is an anatomical probability that the point of the needle in the Hartel injection will tend to reach the sensory root of the ganglion if it is pushed through the foramen ovale far enough.

Two layers of dura mater cover the Gasserian ganglion, forming what is known as the cave of Meckel. The dura is definitely adherent to the ganglion, but not to its sensory root or to the divisions. From this an "hour-glass" effect on the accumulation of alcohol can be conceived. If the alcohol is injected just inside the foramen ovale and into the fibres of the third division of the ganglion, it will first of all tend to accumulate between the ganglion and the foramen ovale; then, limited by the attachment of the dura to the ganglion, will pass along the division, along the postero-external part of the ganglion, and into the region of the sensory root, where it is again possible for it to accumulate. Thus

the alcohol may reach the sensory root without it being necessary for the point of the needle to do so. An eccentric puncture, with the point of the needle actually in the ganglionic tissue itself, will be necessary to anæsthetise other parts of the ganglion than its external margin.

EXPERIMENTAL EVIDENCE.

The following evidence is derived from observation of the course seen to be taken by dyes injected into the region of the ganglion. When a watery solution of a dye is injected through the foramen ovale into the region of the ganglion, it diffuses so readily that the observation is of little value except as showing that the dye flows to the sensory root. By using a gelatin mass stain, however, the course of the spread of the dye can be observed, and it is possible to examine the nerve tissue thus affected.

When a small amount of this stain was injected slowly, it was seen that it accumulated central to the point of the needle and apparently in the ganglion itself. Later section of the nerve tissue, however, revealed that it was not in the ganglionic tissue that the stain lay, but in between the fibres of its root. When larger quantities were injected more rapidly, the whole area became flooded with the stain, which spread along the sensory root and into the posterior fossa of the skull.

CLINICAL EVIDENCE.

The following table, based on a series of 25 injections performed by the writer, shows the areas of anæsthesia which resulted, and the occasional nerve complications which arose.

Case No.	Anæsthesia in division.	Complications.	Case No.	Anæsthesia in division.	Complications.
1	3	—	15	1, 2, 3	—
3	3	—	16	1, 2,	K.
4	3	—	17	1, 3	—
6	1, 2, 3	6	18	1, 2, 3	—
7	3	—	19	1, 2, 3	—
8	3	—	20	1, 2, 3	K.
9	1, 2, 3	6 K.	21	1, 2, 3	—
11	3	—	22	1, 2, 3	—
12	3	—	23	1, 2, 3	K.
13	3	—	24	1, 2, 3	6, 7, 8 K.
14	3	—	25	1, 2, 3	—

From this table it is evident that two groups of anæsthesia result, one affecting the third division alone, the other all three divisions. It is rare for any other combination to occur (actually two cases in 25) and in this sequence the absence of the combined anæsthesia of divisions three and two is notable. It would be expected that, if the ganglionic tissue were involved, irregular areas of anæsthesia, such as divisions three and two, or two and one, would be found. In the circumstances it is reasonable to assume, with the support of the anatomical and experimental evidence outlined, that the combined anæsthesiæ follow effect on the sensory root, whereas the anæsthesia of division three alone is from effect on the peripheral nerve only. This assumption is further supported by the experience that effect on the former tends to be permanent and on the latter temporary.

It will be noted that the sixth cranial nerve was paralysed on three occasions, but never the third or the fourth nerves. This can only be explained if the alcohol spreads along the sensory root of the ganglion and affects the sixth nerve as it leaves the posterior fossa of the skull. The nerve in this situation has been observed in some cases to lie in actual contact with the sensory root. That this is the course taken by the alcohol is finally confirmed by the twenty-fourth case. Here there was a paralysis of both the seventh and eighth nerves as well as of the abducens. This combined anæsthesia is only possible if these nerves are affected at the internal auditory meatus, a foramen lying just below the groove for the sensory root when the head is in the position used in operating. As less than 1 c.cm. of alcohol was injected in this case, it must have spread directly along the sensory root to cause these effects.

In conclusion, the weight of the evidence leaves little doubt that the sensory root is more liable to affection than the Gasserian ganglion when the Hartel injection is performed. Elsewhere it will be shown that, as may be expected, the effect on the sensory root may be permanent. Where this is so the results of injection compare favourably with those of the major operations.

Summary.

1. Trigeminal neuralgia may be treated with success either by operation or by the injection of alcohol into the region of the Gasserian ganglion.

2. The Hartel technique gives a satisfactory method of reaching the ganglion with certainty.

3. It is shown that the route taken by the needle is free from danger, the foramen ovale can be located with accuracy and safety if its relations to both the infratemporal surface of the sphenoid bone and the external pterygoid plate are appreciated.

4. A high, "horizontal" Hartel route is the most accurate, and with its use it is suggested that it is the sensory root, and not the ganglionic tissue itself, that is affected by the alcohol. If so, the results obtained may be expected to be permanent, and so compare with those obtained by major operation.

REFERENCES.

1. Hartley, F.: New York Med. Jour., 1892, lv., 317.
2. Krause, F.: Ann. Soc. Phil., 1893, xviii., 362.
3. Hutchinson, J.: Surg. Treat. Facial Neuralgia, New York, 1905.
4. Spiller, W. G., and Keen, W. W.: Amer. Jour. Med. Sci., 1898, cxvi., 503.
5. Frazier, C. H.: Arch. Neurol. and Psych., 1925, xiii., 378.
6. Frazier, C. H., and Whitehead, E.: Brain, 1925–26, xlvii., 458.
7. Adson, A. W.: Ann. Oto-Rhino-Laryng., 1926, xxxv., 601.
8. Harris, W.: THE LANCET, 1909, ii., 1529.
9. Hartel, F.: Arch. für klin. Chir., 1913, c., 193.
10. Purves-Stewart, J.: Brit. Med. Jour., 1909, ii., 848.
11. Mackay, Y.: Jour. Anat., 1894, xxviii., 67.

BISMUTH OXYCHLORIDE OINTMENT IN THE TREATMENT OF LUPUS ERYTHEMATOSUS.

BY R. M. B. MACKENNA, M.A.CAMB., M.R.C.P.LOND.,
HON. DERMATOLOGIST, LIVERPOOL STANLEY HOSPITAL.

DURING the last two years dermatologists have taken an increasing interest in the treatment of lupus erythematosus with injections of bismuth. Some—e.g., Segrè,[1] consider that the results of this line of treatment compare favourably with those obtained by the injection of gold salts, and prefer bismuth because it is much less toxic and may be given without risk of aggravating a tuberculous lesion within the body.

A survey of the work published on this subject during the last two years shows that the majority of workers have relied on injections of bismuth, and have not applied bismuth locally or given it by the mouth. In January, 1930, I stated[2] that I had not been able to obtain satisfactory results by the

administration of bismuth oxycarbonate or bismuth salicylate per os, and that local applications of Suspensol (a colloidal preparation of metallic bismuth in an ointment basis) had not, in my hands, given satisfactory results. I recorded one case in which satisfactory results had been obtained by the use of 5 per cent. colloidal bismuth oxychloride ointment.

In Europe, inunction with mercury has been used as a treatment for syphilis since 1497, and it was therefore almost inevitable that, as bismuth commenced to supplant mercury in the treatment of this disease, attempts should be made to administer bismuth by inunction. Certain syphilologists have reported favourably on this method of administration; others have categorically asserted that the amount of bismuth absorbed is insufficient to produce any therapeutic effect. The question is still sub judice but, as it had been shown by Nicolas, Lacassagne, and Rousset[3] that injections of bismuth would cure lupus erythematosus, it seemed rational to suppose that good results might be obtained by applying bismuth ointment locally. I therefore prescribed suspensol in several cases of lupus erythematosus, but was not satisfied with the results obtained.

It is generally accepted that oxychloride of bismuth injected intramuscularly is absorbed more readily by the organism than metallic bismuth. It therefore seemed to be feasible to conduct experiments with an ointment containing bismuth oxychloride, preferably in a colloidal state. After many experiments, a research chemist at the St. Vincent Laboratories, 160, Bath-street, Glasgow, was able to manufacture an ointment containing 5 per cent. of the salt in the required colloidal state, and the results obtained by the use of this ointment as a local application for chronic lupus erythematosus have been satisfactory. Clinical trial showed that, in the majority of cases, better results were obtained if the bismuth oxychloride content was increased to 10 per cent. The ointment has been put on the market by the above-named laboratories under the trade name of Bismurung. It is, perhaps, advisable to add that I have no financial interest in its sale.

Results in Lupus Erythematosus.

In all cases the ointment has been applied freely and rubbed with moderate vigour on to each of the affected areas for at least two minutes twice daily. In a few cases of lupus erythematosus it has caused slight irritation and itching of the affected part, but when rubbed into healthy skin it has never caused any local irritation. It has now been prescribed for 19 cases of lupus erythematosus and in none has its application had any but beneficial results. In the majority, injections of bismuth or bismuth salts have been given at fortnightly or monthly intervals in order to intensify the action of the ointment, but although I can quote but one case (No. 11) of lupus erythematosus which has been apparently cured by the use of the ointment alone, this is merely because this line of treatment has only been under investigation during the last 12 months. I am, however, convinced that the average case of this disease can be cured by the persevering application of the ointment alone, but the time in which a cure may be obtained can be shortened by giving a few injections of one of the usual bismuth preparations. Conversely, the use of the ointment reduces the number of injections of bismuth necessary for cure, and incidentally ensures that healing will take place without the formation of a scar.

The following is a brief record of ten of the most typical cases which have been treated:—

CASE 1.—Mr. A., aged 40, had been treated since 1928 with local applications of acid nitrate of mercury for numerous discoid patches of lupus erythematosus affecting the left cheek and the left side of the neck. From July 8th, 1929, to Jan. 11th, 1930, he received a total of 4·6 g. of metallic bismuth intramuscularly. Progress under this line of treatment was disappointing. From Jan. 17th, 1930, to May 30th, 1930, 10 per cent. bismuth oxychloride ointment has been used and he has received only 0·8 g. of metallic bismuth intramuscularly during this period. Three of the discoid patches have disappeared and the remainder are fading.

CASE 2.—Miss B., aged 26, had severe lupus erythematosus affecting the whole of both cheeks, the nose and forehead, and a few discoid lesions of the scalp. From July, 1927, to April, 1929, she had received much local treatment with ultra-violet light. Salicin had been administered internally, and numerous external applications had been prescribed. From April 13th to Dec. 7th, 1929, she received 4·8 g. of bismuth and 1·5 g. of bismuth oxychloride deep subcutaneously. Great improvement took place during October and November, and in January, 1930, it was confidently anticipated that she would be cured within a few weeks. During January and February, 1930, no improvement whatsoever occurred, despite the deep subcutaneous administration of 1·2 g. of bismuth oxychloride. On Feb. 27th she was given 10 per cent. bismuth oxychloride ointment, and was pronounced cured on June 24th, having only received two injections each of 0·4 g. of bismuth oxychloride between Feb. 27th and June, 1930. There is now no scarring of the previously affected parts, and the skin appears to be absolutely normal.

CASE 3.—Miss C., aged 29, had been treated since 1923 for lupus erythematosus affecting the nose and cheeks. The areas had been treated with carbon dioxide snow, acid nitrate of mercury, and various ointments. From Oct. 2nd, 1927, to Jan. 31st, 1930, she received a total of 2·4 g. of metallic bismuth and 3·6 g. of bismuth oxychloride deep subcutaneously. The cheeks became normal during December, 1929, but the condition of the nose remained unchanged. On Jan. 31st, 1930, 5 per cent. bismuth oxychloride ointment was prescribed and applied to the nose twice daily. By April 9th only slight progress had been made, and she was given a 10 per cent. ointment. She was discharged as cured on June 21st, 1930.

CASE 4.—Miss D. had lupus erythematosus (the lesions being vividly erythematous) affecting the eyelids and nose and extending downwards over the cheeks to a distance of one inch from the eyes. From July to October, 1929, a total of 4·8 g. of metallic bismuth was given by injection. No improvement resulted. From November to December 1·6 g. of bismuth oxychloride were injected. Slight improvement then occurred, and the edges of the lesions began to clear up. No marked improvement occurred until Dec. 14th, 1929, when the patient was given 5 per cent. bismuth oxychloride ointment; considerable improvement was seen during the ensuing 14 days. She has received no injections since December. The strength of the ointment was increased to 10 per cent. in March, 1930. When last seen on June 2nd she reported that progress had been slow but continuous. The edges of the lesions were slowly receding and healing had taken place in the central portions of the affected areas. No scarring had occurred.

CASE 5.—Mrs. E., aged 60, had scattered discoid lesions of lupus erythematosus on the forehead, nose, cheeks, and neck. The distribution was bilaterally symmetrical and the scalp was not affected. The eruption had been present for two years. When first seen on March 4th, 1930, she was given an injection of 1 c.cm. of bismogenol, and 5 per cent. bismuth oxychloride ointment was prescribed. Almost immediately she began to improve. The injection was repeated once every fortnight until May 27th, when the lesions had almost disappeared. When last seen on July 27th she was discharged as cured.

CASE 6.—Miss F., aged 34, had lupus erythematosus of the hands of unknown duration. From April 10th, 1929, to May 21st, 1930, a total of 3·4 g. of metallic bismuth was given intramuscularly. The condition improved slowly until Feb. 1st, 1930, when 10 per cent. bismuth oxychloride ointment was prescribed. Progress has since been slightly more rapid, but the patient is not yet cured.

CASE 7.—Mrs. G., aged 31, had lupus erythematosus, affecting the conchæ of both ears, diagnosed in November, 1928. A small area immediately anterior to the left ear was also affected. During 1929 she received a considerable amount of treatment with ultra-violet light, painting with

acid nitrate of mercury, &c. No improvement occurred. During December, 1929, she received a total of 0·8 g. of bismuth oxychloride, but thereafter she refused to have any more injections. The lesions did not improve until she was given a 5 per cent. bismuth oxychloride ointment. By May 7th, 1930, the patch on the cheek had disappeared, leaving no scar, and the affected areas on the ears were practically cured. The 10 per cent. ointment was then prescribed, and six weeks later the right ear and the cheek were completely cured. The concha of the left ear is still affected.

CASE 8.—Mr. H., aged 45, had lupus erythematosus of 18 months' duration in typical bat's-wing distribution. He was first seen on April 17th, 1930. An injection of 0·3 g. of bismuth oxychloride was given and 10 per cent. bismuth oxychloride ointment was prescribed. When next seen on May 9th the eruption on the nose had disappeared and three-quarters of the previously affected areas of the cheeks were normal, the lesions having faded, leaving no scar. Another injection of bismuth oxychloride was given and the patient has not returned for further treatment.

CASE 9.—A spinster, aged 27, had had two small areas of lupus erythematosus on the nose and right cheek for five months. An injection of 0·3 g. bismuth oxychloride was given when the patient was first seen on May 14th, 1930, and 10 per cent. bismuth oxychloride ointment was prescribed. When seen a month later the lesions had practically disappeared.

CASE 10.—Miss L., aged 44, had lupus erythematosus of the face in bat's-wing distribution and the fingers were also affected. There was a two years' history when she came for treatment on March 17th, 1930. 1 c.cm. of bismogenol was given intramuscularly, and 10 per cent. bismuth oxychloride ointment was prescribed. A month later she had improved considerably, and the injection was repeated. On May 17th the face was pronounced cured, and the condition of the hands had greatly improved.

DISCUSSION.

In the typical cases of bat's-wing lupus erythematosus I have found that treatment by injection alone will, in time, produce a cure, but the surface of the skin of the previously affected area remains slightly "rough," the "roughness" apparently being due to a slight degree of hyperkeratosis. If, when the injections are discontinued, the ointment is applied the skin rapidly becomes normal in all respects. In a previous paper [2] I suggested that "any improvement in a case of lupus erythematosus after the injection of bismuth, or bismuth salts, is probably due to the property which bismuth possesses in preventing the tissues from reacting normally to the toxins (or bacteria) which cause the symptoms of the disease. One would therefore expect that the persons who have been apparently cured will sooner or later exhibit a recurrence of the lesions." Only one case which I discharged as being cured has returned with fresh lesions.

CASE 11.—Mrs. G., aged 39, first seen on April 25th, 1929, presented two small rounded areas of lupus erythematosus on the forehead and left temple. These had been present for 17 months. At irregular intervals during the ensuing four months she received a total of 2 g. of bismuth intramuscularly. On Sept. 10th, 1929, she was apparently cured, but on March 15th, 1930, she returned, complaining that during the previous three weeks the disease had recommenced. She presented two small patches of lupus erythematosus on exactly the same areas as had previously been affected. She was ordered 10 per cent. bismuth oxychloride ointment, no injection being given, and a month later she reported for examination and appeared to be cured.

This case seems to suggest that the prompt use of the ointment can abort a relapse of the disease.

There has, unfortunately, been no opportunity for using the ointment in a case of acute lupus erythematosus, and I have been unable to find any record of the treatment of a case of this disease with bismuth. In my opinion the most satisfactory line of treatment would be to administer deep-subcutaneously, as frequently as possible, a water-soluble bismuth salt—e.g., sodium-bismuth-thioglycollate—which would be rapidly absorbed, and to apply 10 per cent. oxychloride of bismuth ointment to the affected areas (or to a large part of the affected area) of the skin. This line of treatment might, perhaps, reduce the high percentage of mortality of these cases, and would probably prevent the common sequelæ in those patients who do recover—viz., the development of chronic lupus erythematosus, or the production of cicatricial atrophy of the skin of the affected parts.

Other Uses of the Ointment.

The ointment has been used in a few cases other than lupus erythematosus. Two cases of lupus vulgaris were aggravated by it. As was expected, no response was obtained in a case of lichen ruber planus affecting the legs. Two cases of pustular folliculitis of the neck cleared up within 48 hours of the application of the ointment, but one would have expected the same result from ung. hydrarg. ammon. dil. Nevertheless these two cases seem to show that the ointment has a certain antiseptic effect. This supposition is to a slight degree confirmed by the following cases:—

CASE 12.—Mrs. K., aged 70, had suffered since September, 1927, from tinea unguium affecting three fingers of the right hand. Antiseptic applications, ranging from ichthyol to mercurochrome, and including various forms of iodine, have been used. Ointments have also been applied. Owing to the patient's age it has not been considered advisable to remove the nails. The disease has been extremely resistant to treatment, but the condition of the nails has steadily improved since March, 1930, when bismuth oxychloride ointment, 10 per cent., was prescribed.

CASE 13.—Miss L., aged 29, has tinea of the nail of the first finger of the right hand. Since June, 1929, a large number of the usual antiseptic applications have been used. The condition has from time to time improved, only to relapse. On May 9th bismuth oxychloride, 10 per cent., was prescribed and the condition of the nail has steadily improved. There has not been any relapse since that date.

CASE 14.—Mr. M., aged 35, with no previous history of venereal disease, who denied extra-marital congress, had marital congress on May 1st. On May 8th two small sores were first noticed on the inner side of the prepuce. These spread rapidly, and he reported at hospital on the 12th. On examination the sores were found to be non-indurated and in all respects typical chancroids. The Wassermann reaction was negative. Serum from the sores was examined microscopically, but no *Spirochæta pallida* were found. Saline baths were prescribed, and on May 19th further microscopical examination failed to reveal the presence of *S. pallida*. The lesions were spreading, and by this date were each about 1·2 cm. in diameter. Saline baths were continued, but as no *S. pallida* were found, and as the sores were enlarging, washes of perchloride of mercury, 1/3000, and ung. hydrarg. (half strength) were prescribed on May 29th. The chancroids slowly increased in size, despite this treatment, until June 12th, when bismuth oxychloride ointment, 10 per cent., was prescribed, to be applied twice daily. By June 19th one of the ulcers was completely healed, and the second ulcer was healed by June 26th. The Wassermann reaction on June 26th was negative.

CASE 15.—An unmarried man, aged 31, contracted gonorrhœa in 1928, and was discharged as cured after three months' treatment. Exposure to venereal infection occurred on May 15th, 1930, when there had been no previous exposure for at least four months. On the 20th he noticed a sore on the prepuce and reported for treatment on the 22nd. He then presented a small non-indurated irregular preputial sore, associated with a slight enlargement of the inguinal glands. Microscopical examination failed to reveal the presence of *S. pallida*. The Wassermann reaction was, however, positive. Lotio hydrarg. perchlor., 1/3000, was prescribed as a local application. On May 29th an injection of neosalvarsan, 0·45 g., was given, and as the sore had not responded to the treatment but had enlarged slowly bismuth oxychloride ointment was prescribed. The injection of neosalvarsan was repeated on June 5th, 12th, and 29th, and the sore healed on or about July 1st. Antisyphilitic treatment was continued, bismuth injections also being given. A tentative diagnosis of chancroid in a syphilitic patient was made.

The cases quoted seem to show that the ointment may be of value in cases of tinea unguium and of

chancroid. It has not been employed in cases of syphilis, but it may be presumed that it has a certain use as an application to primary chancres, condylomata, and, perhaps, to the rashes of secondary syphilis in order to diminish the infectivity thereof during the latent period between the administration of arsenobenzol and the disappearance of the visible symptoms of the disease.

The ointment has been found of some value in hastening the absorption of gummatous lesions of the skin :—

CASE 16.—A steward, aged 38, contracted syphilis five years ago, but received no arsenobenzol treatment. When seen on March 31st, 1930, he presented multiple gummata on the forearms and on the back of the left hand. The Wassermann reaction was strongly positive. During April he received a total quantity of 2·25 g. novarsenobenzol intravenously and 0·9 g. of bismuth oxychloride intramuscularly. As a local application ung. hydrargyri, half strength, was given. The gummata rapidly decreased in size, but disfiguring blue marks remained on the skin. Routine antisyphilitic treatment was continued, and on May 5th bismuth oxychloride ointment, 10 per cent., was prescribed as a local application. Fourteen days later the skin of the affected area was normal in colour and the last traces of the gummata had disappeared.

It is suggested that the bismuth oxychloride ointment may be found of use in the treatment of yaws.

Bismuth Inunction.

As Sequeira[4] has said, "stereotyped routine" in the treatment of syphilis "has given place to a plasticity which indicates a tardy appreciation of accumulated experience," and one of the results of this plasticity is that the administration of mercury by inunction is but seldom advocated by the syphilologists of this country. Nevertheless, the majority of neurologists agree that, in cases of pre-ataxic and early ataxic tabes, better results may be obtained by a judicious employment of "mercury rubbing" and neoarsenobenzol therapy than by the employment of neoarsenobenzol and mercury or bismuth injections. It seemed, therefore, that it was of interest to determine whether or not the colloidal bismuth oxychloride in the ointment was absorbed by the skin in sufficient quantities to make bismuth inunctions a feasible proposition. To this end the writer requested the services of Mr. Arthur Padley of Liverpool, who for the last 25 years has had a very considerable experience of the Aachen technique of mercury rubbings. On the first occasion a drachm of 10 per cent. bismurung was rubbed into the back of a healthy male patient for 20 minutes. The total urine for the ensuing 24 hours was collected, but no bismuth was found to be present in the urine, although four hours after the rubbing the patient complained of a metallic taste in the mouth. The experiment was repeated on the same person a fortnight later. The saliva and the urine were both analysed, but no bismuth was found in any specimens taken up to 40 hours after the rubbing.

A 20 per cent. bismurung was obtained, and two males submitted to rubbings. One of them, aged 21, 6 ft. 1 in. in height and 150 lb. in weight was healthy. The other, aged 23, 5 ft. 4 in. in height, weighing 10 st., was suffering from chancroid but was otherwise healthy. Mr. Padley rubbed these two patients with one drachm of 20 per cent. bismurung ointment daily for one week. The rubbing was most thorough, and lasted for 20 minutes on each occasion, various areas of the body being treated on different days, in accordance with the Aachen technique. No ill-effects were complained of by the patients, who were invigorated by the massage, and the ointment did not cause any irritation of the body, even on the hairy areas of the legs. The total urine passed by the patients each day for a week was collected and mixed and was then sent to Miss E. Sadler, M.Sc., of the Department of Pharmacology of Liverpool University, for analysis. Only very small amounts of bismuth were found in the urine. As a control to this experiment the urine taken from three different patients who had received intramuscular injections of bismuth oxychloride was subjected to analysis, and Miss Sadler had no difficulty, not only in detecting the presence of bismuth, but also in estimating quantitatively the amount thereof in the samples. The following table shows in detail the results of this experiment :—

Data.—In 1 drachm of 20 per cent. bismurung there is approximately 0·78 g. of bismuth oxychloride; 0·78 g. of bismuth oxychloride contains 0·6265 g. of bismuth :—

Case A.

Day.	Total amount of urine passed in 24 hours.	Amount of total daily output of urine examined.	Amount of bismuth found.	Total amount of bismuth excreted in 24 hours.	Concentration of bismuth in mg. per 100 c.cm. urine.
Control.	c.cm. —	c.cm. 80	mg. Nil.	mg. —	mg. —
1st ..	910	100	Nil.	—	—
2nd ..	1187	237	0·005	0·025	0·0021
3rd ..	480	100	0·015	0·075	0·0150
4th ..	1430	286	0·005	0·025	0·0018
5th ..	1180	236	0·008	0·040	0·0034
6th ..	490	100	0·010	0·050	0·0100
7th ..	670	134	0·010	0·050	0·0075

Case B.

Control.	—	80	Nil.	—	—
1st ..	1050	100	Nil.	—	—
2nd ..	490	100	0·010	0·050	0·0100
3rd ..	430	90	0·007	0·033	0·0080
4th ..	1170	234	0·005	0·025	0·0017
5th ..	1280	256	0·010	0·050	0·0039
6th ..	650	130	0·005	0·025	0·0038
7th ..	760	152	0·010	0·050	0·0066

This experiment seems to show that, while bismurung may be of some value as a local application in the treatment of syphilis, it is valueless if used as an inunction.

Summary.

(1) A preliminary report has been submitted upon the treatment of chronic lupus erythematosus with bismuth oxychloride ointment. (2) Of a series of 19 cases of chronic lupus erythematosus, all of which have benefited from the use of the ointment, ten have been reported in detail. Of these, five have been cured by the use of the ointment, in conjunction with injections of bismuth, and the clinical reports indicate that in many cases the disease may be cured by the local application of the ointment, without injections of bismuth. (3) Cases have been quoted showing that the ointment appears to have a slight antiseptic or bactericidal effect; the ointment has been employed with advantage in two cases of tinea unguium and two cases diagnosed as chancroid. (4) It is shown that, while the ointment may be of value as a local application in the treatment of yaws and syphilis, it is valueless if administered by inunction.

It is my pleasant duty to acknowledge my indebtedness to Prof. W. J. Dilling and to Miss E. Sadler, of the Pharmacological Department of Liverpool University, for their assistance in the laboratory work detailed in this paper.

REFERENCES.

1. Segrè, G.: Giorn. ital. di derm. e sifil., 1929, lxx., 1295.
2. MacKenna, R. M. B.: THE LANCET, 1930, i., 178.
3. Nicholas, J., Lacassagne, J., and Rousset, J.: Paris Méd., 1929, i., 62.
4. Sequeira, J. H.: THE LANCET, 1930, i., 1328.

CLINICAL AND LABORATORY NOTES

A CASE OF ACTINOMYCOTIC CEREBRO-SPINAL MENINGITIS

ASSOCIATED WITH AURAL ACTINOMYCOSIS.

BY L. W. CANN, M.B. LOND.,
SENIOR ASSISTANT BACTERIOLOGIST, GUY'S HOSPITAL;
AND
G. J. HOLLIS, M.R.C.S. ENG.,
HOUSE SURGEON TO THE HOSPITAL.

Henry Herbert in 1910 reviewed the literature and could find only 25 recorded cases of cerebral actinomycosis, but many of these were not established, and most of the remainder showed localised abscesses and not a basal meningitis. In none were culture or inoculation experiments successful. He concludes that the cerebral metastases most frequently follow primary lung or bronchial gland lesions, while less commonly extension occurs from the neck or face, as in the case he records. He also describes it as a disease that affects adult males. No cases of aural actinomycosis are mentioned. Naunyn (1888) records an unusual case: that of a girl, aged 16, in which meningitis was associated with vegetations upon the mitral valves. Microscopic examination disclosed a streptothrix in both lesions. The more recent literature contains a considerable number of cases of actinomycosis of the ear, in some cases with involvement of the meninges, although these latter cases are still less common than those in which metastases occur from primary chest infections.

D'Ewart and Dawson (1927) record a case in which a child died showing actinomycotic lesions in the lungs with a cerebral abscess and some basal meningitis. They do not seem to have considered the lungs as the primary lesion, since they suggest that both brain and lung lesions were metastases from an undetected gastric focus. They also claim that their case is the only one on record of actinomycosis in the brain of a child. Records of cases occurring in England appear to be limited to the above and that described very fully by Delephine (1889). Moesch (1921), in collecting cases of actinomycosis that have occurred at the Mayo Clinic, found records of seven in which the brain was affected. Sandford and Voekler (1925) collected 670 cases of actinomycosis, and only nine of these showed cerebral involvement. Snoke (1928) considers that the metastases occur via the lymphatic system.

CASE RECORD.

A girl, aged 9, was admitted to Guy's Hospital on March 5th, 1930, at first under the care of Dr. H. C. Cameron and subsequently under Dr. N. Mutch. Her health had been good until Nov. 28th, 1929, when adenoids were removed. Tonsillectomy had been performed some years previously. She had been kept in hospital for two days, but on discharge made a slow recovery; three weeks after the operation she complained of pain in the back of the head. Although she remained in fair health, this pain continued until Jan. 12th, when it became more severe and kept her awake all night. A doctor was consulted and the child was put to bed for 14 days. The pain, however, persisted, and in addition the mother noticed some "hunching" of the right shoulder and that the child was in pain if she attempted to move her head. For a few days she improved and was allowed to walk about, but soon developed double vision and a definite torticollis on the right side. After 14 days there was again a remission of symptoms which, however, soon returned, and in addition pain occurred in the right buttock. The mother was advised to have a consultation at Guy's Hospital, where the patient was examined by Dr. Cameron on Feb. 25th, 1930; he advised admission. Between this time and the date of admission (eight days) she developed definite head retraction, some opisthotonos, and had two "shivering fits." Although she was obviously ill, her mental condition had been bright during these three months. On admission to hospital on March 5th she had a temperature of 102·8°, a pulse-rate of 102, and a respiration-rate of 24.

She preferred to lie in bed with the weight on her left shoulder. She was restless and her back was very arched. There was slight tenderness over the lumbar spine. The definite head-retraction and opisthotonos were accompanied by a positive Kernig's sign, but all the tendon reflexes appeared normal. The plantar response was flexor. The eyes showed no paralysis and reacted to light and accommodation. Mr. Mollison, who examined the ears, observed no signs of disease. The blood picture showed hæmoglobin 78 per cent. and total white cells 28,000. A differential count showed polymorphonuclear cells 82 per cent., lymphocytes 16 per cent., eosinophils 1 per cent. and indeterminate cells 1 per cent. No other abnormality was discovered. Especially we would emphasise the absence of signs in the lungs, as this is the commonest site of the primary lesion in actinomycosis showing meningeal metastases.

Direct smear of pus from cerebro-spinal fluid, showing a small mass of filaments (×1000).

Lumbar puncture was performed under a general anæsthetic and some difficulty was experienced in withdrawing 5 c.cm. of cerebro-spinal fluid. The fluid was markedly turbid and blood-stained and under a pressure of 140 mm.; 15 c.cm. of antimeningococcal serum were given intramuscularly. Upon the second day even more difficulty was experienced in aspirating this thick fluid, and consequently on the third day (March 8th) a cisternal puncture was combined with the lumbar route and the theca bathed until the washings were clear. The fluid obtained was heavily purulent. Upon standing the pus occupied half the tube. A general anæsthetic was administered on each occasion and 15 c.cm. of antimeningococcal serum were given, on the latter occasion intrathecally. On March 9th the same procedure was repeated. The fluid was somewhat less turbid. On the 10th three successive lumbar punctures failed to produce any fluid. Upon cisternal puncture a small amount of very thick fluid was obtained.

By this time the diagnosis had been definitely accepted as actinomycotic meningitis, although clinical examination had failed to disclose any primary focus. The subsequent treatment was symtomatic except for two doses of novarsenobenzol (0·45 g.) given on the 12th and 14th respectively.

The patient became steadily worse and died in coma on March 16th. The temperature, which for the first two days after admission had been 103° F., fluctuated between 99° F. and 100° F. until death. The pulse-rate, except for a terminal rise, was usually 140 beats per minute. The respiration-rate was constantly about 30 per minute.

POST-MORTEM AND LABORATORY FINDINGS.

Except for emaciation and a terminal broncho-pneumonia, the macroscopic pathological findings were confined to the brain and right middle ear. Thick yellow pus filled the middle ear but the drum was intact, and there was no evidence of involvement of mastoid air cells. Thick yellow fibrinous pus extended over the base of the brain, penetrating the larger fissures. Careful search failed to disclose any other possible primary lesion beside the middle ear.

The three specimens of cerebro-spinal fluid examined during life all showed approximately the same characteristics. They contained much more thick pus than the ordinary pyogenic or tuberculous meningitis, and the first specimen was of a brownish tint due to blood pigments. Upon standing for some hours the pus extended to about half the

level of the total fluid. The chloride content of the three specimens varied between 660 and 670 mg. per cent. Microscopical examination failed to show any micro-organisms in the first specimen and cultures remained sterile. In the second some Gram-positive branching filaments suggestive of a streptothrix were seen, and upon washing the pus with saline definite tinted granules were obtained, consisting almost entirely of mycelium. The third specimen confirmed these findings and contained more and larger masses of mycelium (see Figure). Smears of the pus from the middle ear and meninges taken at post mortem both showed the same Gram-positive branching filaments. No other organism was observed microscopically.

Numerous cultures were made both aerobically and anaerobically upon blood agar, glycerin agar, glucose agar and glucose broth. All remained sterile with the exception of those incubated anaerobically in glucose broth, in which a granular sediment appeared after five days. This when stained showed short Gram-positive filaments but no branching. Subculture upon other media failed to show any growth whatever and the original glucose broth culture quickly died out.

We were therefore unable to establish the identity of this streptothrix. Difficulty in obtaining satisfactory cultures from streptothrix infections is a fairly common experience, and the diagnosis has usually to be based upon the presence of definite granules or *Drusen* in the pus and the microscopical appearance of the organism in direct smears.

REFERENCES.

1. Bell, H. H.: Jour. Inf. Dis., 1922, xxx., 99.
2. Delepine, S.: Trans. Path. Soc. Lond., 1889, xl., 408.
3. Drury, D. W.: Jour. Amer. Med. Assoc., 1929, xciii., 974.
4. D'Ewart, J., and Dawson, G. D.: Brit. Med. Jour., 1927, i., 719.
5. Henry, H.: Jour. Path. and Bact., 1910, xiv., 104.
6. Naunyn, B.: Mitt. med. Klin. (Königsberg), 1888, p. 300.
7. Moersch, F. P.: Collected Papers, Mayo Clinic, 1921, xiii., 1080. (With bibliography.)
8. Sandford, A. H., and Voekler, M.: Arch. Surg., 1925, xi., 809.
9. Snoke, P. O.: Amer. Jour. Med. Sci., 1928, clxxv., 69.
10. Zanni, G.: Valsalva, 1929, v., 287.

MUCOCELE OF THE APPENDIX

CAUSED BY EARLY CARCINOMA OF CÆCUM.

By J. B. G. Muir, M.B. Lond., F.R.C.S. Eng.,

PRINCIPAL MEDICAL OFFICER, KAILAN MINING ADMINISTRATION, TONGSHAN, NORTH CHINA.

Cystic dilatation of the appendix is occasionally recorded in long-standing cases of catarrhal inflammation where there is occlusion of the appendicular orifice, but it is rather an unusual complication of carcinoma of the cæcum. Wilkie has pointed out that acute appendicitis may be the first indication of this disease when the growth obstructs the proximal lumen of the appendix, so that the patient whose case-report follows may be considered fortunate in that an early cæcal growth caused a mucocele of the appendix.

A Russian musician, aged 37, consulted me last April for dyspepsia associated with fairly constant abdominal pain. His symptoms were suggestive of a gastric ulcer, but there was no epigastric tenderness, although tenderness was very marked on palpation in the right iliac fossa, where a slightly movable tumour, about the size of a pigeon's egg, was detected. It appeared to be the appendix surrounded by adherent omentum, but above it a definite hard thickening of the cæcum was apparent and was very tender. I advised an exploratory operation, to which he agreed.

Laparotomy was performed through a right paramedian incision, and an early growth of the cæcum was found. The proximal two-thirds of the appendix were distended into a cystic swelling the size of a small egg, which was partly invaginated into the cæcum. A few hard and shotty glands in the ileo-cæcal region served to confirm the nature of the cæcal tumour, and I accordingly performed a partial colectomy, excising the cæcum with its cystic appendage and the ascending and proximal half of the transverse colon, with the enlarged glands. A side-to-side junction was made between the ileum and the distal half of the transverse colon. The patient made an uninterrupted recovery, with complete relief of his symptoms, which had been rather in the nature of appendicular gastralgia.

Section of the tumour showed a typical adeno-carcinoma of the cæcum, infiltrating the submucous layer and completely occluding the orifice of the appendix. The cystic dilatation of the latter contained about three-quarters of an ounce of clear mucus, which was quite sterile on culture. Several of the mesenteric glands revealed early metastases.

NEW INVENTIONS

AN OCCLUDER FOR SQUINT.

Theoretically total occlusion of the better eye ought to be ideal for overcoming amblyopia in convergent squint; practically, however, certain disadvantages occur which tend to neutralise the good effect. Among the more important of these are the following: simultaneous vision of the two eyes—a step towards achieving binocular vision—is definitely sacrificed; mobility of the occluded eye is interfered with; and convergence is not relaxed. The question thus arises whether total occlusion is necessary or even desirable. In the design now described this principle has been dispensed with. The occluder

consists of two parts—a "half lens" of Chavasse glass which covers rather more than the nasal half of the spectacle lens, behind which it is worn, and a rubber projection which can be trimmed where necessary to fit into the inner aspect of the orbit. Chavasse glass has one surface plain and the other mottled, the effect being to permit a perfectly clear view of the eye while at the same time vision is reduced to 6/60ths or less.

The advantages of this occluder may be summarised as follows: (1) It may be said to be practically invisible. (2) It permits central vision of the occluded eye only in the position of relaxed convergence. (3) It emphasises the relative equality of peripheral vision in the two eyes, encouraging more reliance on the squinting eye and thus: (*a*) discourages its desire for suppression, (*b*) overcomes its relative immobility. (4) It encourages a position of the visual axes in which images fall on relatively corresponding points. (5) By relaxing excessive convergence it may secondarily relieve accommodative spasm.

The occluder has been made at my suggestion by Messrs. Theodore Hamblin, Ltd., 15, Wigmore-st., W.

A. Rugg-Gunn, M.B. Edin., F.R.C.S. Eng.

MEDICAL SOCIETIES

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held at the West London Hospital on Jan. 9th, with Dr. H. H. SANGUINETTI, the President, in the chair, when a discussion was held on

Malignant Disease of the Large Intestine.

Mr. GORDON TAYLOR, opening the discussion, said that cancer of the alimentary tract accounted for quite half the total number of deaths which resulted from malignant disease, and that the statistics of operations done by British surgeons compared favourably with those reported from other countries. When cancer of any region of the body was under consideration, the safety of a suggested operative procedure was not the only factor to be regarded. Pending a much greater knowledge of cancer than was so far possessed, the brightest prospect of cure was still offered by ruthless surgery. Concerning methods of operating, when the growth was on the distal side of the cæcum, cæcostomy was, in most cases, the procedure of choice. A two-stage, or even a three-stage operation was a safety factor. In cases in which the colon was secondarily involved, even if partial obstruction were present, Mr. Gordon Taylor preferred to operate in stages; it was better to save a patient in two or three months than to kill him in 24 hours. Blood transfusion was particularly indicated in cases in which there was associated intestinal hæmorrhage; it was also valuable in dealing with post operative shock. He had not had much experience of preliminary immunisation. With regard to methods of intra-abdominal anastomosis, many subjects of cancer were elderly and their vessels were already showing degenerative changes. His own custom was to avoid the use of all large crushing clamps, and, as far as possible, he chose for his incision the sides of the body or the flank close to the tumour, thus keeping clear of the middle line of the abdominal wall and the mid-stream of the abdominal cavity. He believed that the only really radical operation for a carcinomatous rectum was the abdomino-perineal method of Mr. Ernest Miles, though admittedly this procedure was of a magnitude which made many surgeons reluctant to embark on it, and sometimes consideration of safety required the performance of a less radical operation. It was with reluctance that, in more cases than he liked, he himself felt compelled to carry out what he knew to be a less perfect procedure. The statistics at St. Mark's Hospital showed 28·5 per cent. of five-year cures; and the results on a five-year basis reported from this country and from abroad showed remarkable similarity. Mr. Gordon Taylor's own end-results did not justify the optimism expressed by those practising the perineal operation alone. In an ideal subject, the division of the abdomino-perineal operation into two stages rendered it much less formidable.

The modification of technique used by him in the perineo-abdominal was that described by Mr. Grey Turner in 1920. The main portion of the operation was devoted to the perineal stage, the other, the abdominal, being brief.

In regard to radium, he asked whether it was likely that the introduction of radium tubes into the mesentery would act as a barrage against the upward spread of cancer cells which were not regarded as radio-sensitive. He considered that the greatest factor of safety in the management of cases of carcinomatous rectum was the judgment of the surgeon, who must take into consideration the age, sex, cardio-vascular system, as well as the bodily configuration of the patient. The fact that so many statistics concerning cancer in the rectum and colon were based on a three-year survival seemed to indicate a spirit of pessimism. It was questionable whether one ought to advise a patient to submit himself to a serious operation if the only prospect this seemed to offer was a miserable three years of life. A mere colostomy might give a further life of from two to eight years.

DIAGNOSIS.

Dr. C. E. LAKIN raised the subject of diagnosis, basing his remarks on a case of an old woman who for nearly 20 years was in the cancer wing of Middlesex Hospital. In that wing, beds were provided for patients until, in the words of the Charter, they were either relieved by art or released by death. The release of this patient was by death. She had stricture of the rectum and a very large liver. During her stay in hospital, the diagnosis was carcinoma of the rectum, with secondary deposits in the liver; yet she lived for a very long time. At the autopsy a stricture was found just within reach of the finger from the anal margin, and an enormous mass in the liver consisting of debris and partially calcified pus. She had had an amœbic ulcer of the bowel; the lower ulcer had healed, and the supposed growth was simply a stricture, while what was supposed to be a metastasis in the liver was the large amœbic abscess from which infection had died out, and which was innocuous in the later stages. Generally speaking, the symptoms of carcinoma of the colon were not always recognisable at first. In one class of case the patient had marked anæmia when advice was first sought. In cases of carcinoma of the cardiac end of the stomach it was sometimes difficult to say with certainty, before an elaborate examination was made, that the condition was gastric carcinoma and not pernicious anæmia. Commonly, however, in gastric carcinoma, there was a story of bowel irregularity. Another class of case was also liable to cause confusion. For example, an old woman who came up for operation was emaciated, had pyrexia, and complained of abdominal pain. She had a leucocytosis of 22,000. The diagnosis made was diverticulitis, and no operation was performed. When, later, the patient died, a small annular carcinoma of the sigmoid was found and this had ulcerated posteriorly. The case had been misleading because there had been no obstruction, and the patient had few symptoms except local tenderness and fever.

Dr. BAKER spoke of precarcinomatous conditions. He said that in the intestinal canal adenomatous conditions were often encountered which might result eventually in definite malignant disease. He showed microscopic sections from a case in which there was a growth of the small intestine. He drew particular attention to a raised ridge which ran round the bowel and seemed like an elongated papillomatous area. It looked like an exaggerated fold of the mucosa, and the point at which the change from the normal took place to this thickened ridge was marked. His view was that tumours started in this way, as an area in the intestine which had undergone precancerous changes, and not always as a small focus or a few cells.

Dr. P. MONKHOUSE spoke on the radium treatment of carcinoma of the rectum, remarking that he did not think the outlook in this respect was as hopeless as Mr. Gordon Taylor had indicated. In squamous-celled carcinoma of the anus, quite good results could be expected from radium, and it was, he thought, well worth while to treat such cases with radium, perhaps doing a preliminary colostomy. In rectal carcinoma the response to irradiation was very variable. Shortly before Christmas, 1930, he began to treat, with radium, a patient who had columnar-celled carcinoma, since the decision was against operation. He had inserted radium from the perineum so as to surround the growth, and the reaction of the growth to it had been very good. Generally speaking, radium treatment should not be recommended for columnar-celled carcinoma except in inoperable cases, since the reaction could not be forecast with any certainty.

Mr. W. B. GABRIEL emphasised the importance of what could be termed the old-fashioned clinical methods in diagnosing carcinoma of the colon; the tendency at the present day was to go straight to barium enemata and occult blood tests. The patient's history could give valuable information, especially a history of bowel irregularity, abdominal pain, or distension. The clinical examination should be repeated, since on one day the abdomen might be flat and apparently normal, while on another it might be somewhat distended, and possibly palpable peristalsis could be observed. After this repeated examination, occult blood tests might be done. In the barium enema examination there were many fallacies. It was a very fluid enema, and could run through a stricture which might seem impassable from an examination of the specimen. Another fallacy arose from overlapping; a distension above or below the stricture might quite obscure the stricture itself. A negative barium enema finding should never be accepted without question. With regard to cancer of the rectum, practically all such cases could be diagnosed by a combined examination with the finger and the sigmoidoscope. Cancer of the recto-sigmoidal region could not be detected by a barium enema. In the two-stage operations Mr. Gabriel did a preliminary laparotomy and colostomy under a general anæsthetic. At the second operation he gave 5 or 6 c.cm. of avertin, running it into the colon via the upper colostomy opening. The patient fell asleep, and 20 minutes later spinal anæsthesia was induced. The duration of the anæsthesia seemed to be definitely lengthened by the avertin. He had been greatly disappointed with radium, and he related cases of cancer in which radium had failed.

Dr. H. H. MILLS thought that the surgeon's judgment on whether or not an operation ought to be performed deserved as much care from him as the technical part of the operation. His impression, after a considerable experience, was that people over a certain age should be spared surgery if there was not complete obstruction. He spoke of a woman now in her ninety-fifth year, who had had an abdominal mass pressing on her venous and lymphatic system for at least eight years. Both abdomen and legs were greatly distended, she had a large liver, and she passed blood in the motions. Yet despite that she was active and happy. She had never been operated upon, and the decision to spare her surgery seemed to have been a wise one.

GRADING OF NEOPLASMS.

Mr. W. T. WARWICK recalled a patient on whom colostomy had been performed ten years previously for carcinoma of the rectum. With regard to carcinoma of the colon, a decade ago the optimistic surgeon would probably have said that he could cure a large percentage of cases; if he did not succeed, he would lay the blame on the practitioner for having allowed cases to go too far. To-day, however, the private opinion of the surgeon was much more gloomy. Carcinoma of the colon was much more malignant than was usually supposed. At Middlesex Hospital considerable importance was attached to the grading of tumours. The St. Mark's Hospital grading was an anatomical one, depending on spread through the coats of the bowel, and it was excellent so far as it went. Many sections had to be looked at in order to get satisfactory grading. Recently, however, it had been claimed that grading could be done from small portions taken from the edge of the bowel by a punch. Two workers at the Mayo Clinic had grouped 590 cancers, and had found that the percentage of cases in which metastases occurred increased in direct proportion to the grade of malignancy. There were four grades of increasing malignancy. In the first were 103 cases; in the second, 293; in the third, 139; in the fourth, 52. Grades 2 and 3, the intermediate groups, were by far the most common in cancer of the rectum. The percentage of patients who died after a fixed interval rose, in the four grades, as follows: 44, 62, 75, and 86.

Whether it was possible to do anything to help overcome the infection of the growth and to make the secondary operation less hazardous by means of intraperitoneal vaccination was a question which could not yet be answered. Certainly, however, drainage of the bowel and the use of intravenous hypertonic salines and glucose did help considerably to improve the patient's condition. Blood transfusion completed the pre-operative measures. The post-operative measures should include intravenous glucose, or intravenous or subcutaneous water and saline, in order to rest the anastomosis as much as possible. In a large number of cases the cæcostomy worked to a minimal extent after the excision of the growth combined with anastomosis. The bowel should be rested after operation by giving as much fluid as possible intravenously or subcutaneously, and combining it with glucose.

Dr. GERALD SLOT remarked that many patients, in hospital at any rate, gave a history suggestive of neoplasm. Further investigation, for example, barium enemas—which were not always possible—gave only inconclusive results, and the question arose what further means should be taken to make an accurate diagnosis. It had been found that, when only small growths were in the colon, the whole of the under surface of the liver was apt to be studded with even smaller growths. Metastasis in such cases was probably far more prevalent than it was commonly supposed to be. The treatment of inoperable cases with heavy metal salts—cuprase and selenium, for instance—had to be considered. Dr. Slot had seen two cases treated in this way in England, though both died eventually, the treatment afforded considerable relief.

Dr. STEWART WEBB said that a large proportion of intestinal growths were detectable, but too often the technique employed was faulty. Often the enema given was so bulky that the walls were distended. Growths on the right side of the colon were better detected by giving a barium meal.

The CHAIRMAN summarised the discussion. He said that private patients who could not be sent to hospital and could not afford expensive nursing homes were those who were seriously inconvenienced

by the expense and the difficulty of securing the more elaborate means of diagnosis. It would be well if the profession could devise means for overcoming this difficulty.

Mr. GORDON TAYLOR, in reply, related a number of cases of malignant disease in which radium or X rays were unavailing, and said it was significant that the authorities in charge of the Radium Clinic in Paris were adverse to the treatment of any kind of carcinoma of the rectum by that means.

ROYAL SOCIETY OF MEDICINE.

SECTION OF NEUROLOGY.

AT a meeting of this Section held on Jan. 8th, the chair being taken by Mr. LESLIE PATON, the President, a paper on the

Ætiology of Disseminated Sclerosis

was read by Dr. E. A. CARMICHAEL. He discussed the evidence for the presence of a virus (*Spherula insularis*) under the four headings of the Lange gold-sol curve, the lævulose-tolerance test, the variation in the pH of cultures, and the microscopic appearance of cultures.

Only undoubted cases of disseminated sclerosis had been examined, he said, and they had been grouped into acute, progressive, and stationary. The gold-sol solution had been made according to the method of Mellanby and Davies, and only samples giving a typical paretic curve with untreated cases of general paralysis had been used. The character of the curve had been found to be in no way associated with the stage of the disease, and in only 31·9 per cent. of the 94 cases had curves of three or over been obtained. Apparently, therefore, the workers at the Westminster Hospital who had obtained 54 per cent. of curves over three might have been using a too sensitive solution.

The lævulose used had contained about 5 per cent. impurity and the estimates had been made by Hagedorn's method. Only 6 out of 28 cases had shown a rise of over 30 mg. in the blood-sugar after the ingestion of 50 g. of lævulose. The workers at the Westminster Hospital had suggested that rises of 70 mg. and over occurred in 70 per cent.; possibly they had used less pure lævulose or else arsenical treatment might have disturbed the liver function.

EXAMINATION OF CULTURES.

Great care had been paid to the pH determinations, which had been performed by the closed cell method with colorimetric methods as confirmation. Corrections had been made for temperature, and the investigator had not known the clinical data or nature of the case until after he had concluded the estimation. The Hartley's broth had been obtained from the same source as that used at the Westminster Hospital and the serum had come from volunteer students of St. Bartholomew's. The proportions of serum, broth, and cerebro-spinal fluid had been those recommended by Miss K. Chevassut. The pH value of serum had been found to differ in various samples, so that the addition of serum to broth in constant proportions would give different pH values to the resulting mixture. Moreover, if the ratio of broth to serum was altered, the pH value of the resulting mixture varied. In order to obtain a mixture with a constant pH value of 7·5 to 7·6 the mixture had been titrated with decinormal acid or alkali, and also a number of untitrated mixtures of various pH values were used. It had been stated in the work from the Westminster Hospital that a mixture of broth and serum kept its pH value of 7·6 over a period of days, or else became slightly acid. It had been found, however, that when fresh serum was used the mixture invariably became alkaline, presumably on account of the loss of carbon dioxide. Cerebro-spinal fluid from a number of cases not suffering from disease of the central nervous system had been added to the broth and serum mixture, and in every case the pH had risen to the alkaline side, reaching a level of eight or more. When the cerebro-spinal fluid had been taken from cases of disseminated sclerosis the same result had been obtained. Thus in 19 cases, of all three types, no confirmation of the shift to the acid side had been obtained. No matter how the mixture of serum and broth had been prepared and no matter what the source of the cerebro-spinal fluid, the resulting mixture had always become more alkaline. An investigation into the quantity of carbon dioxide had shown that the increased alkalinity was due to a very considerable loss of this gas; if it were retained to some extent by culturing under paraffin the shift to the alkaline side had become less evident, and if it were replaced by putting the mixture in a partial pressure of carbon dioxide equal to that of the alveolar air the pH value had moved to the acid side, returning to the alkaline side after exposure to the air. As no precautions had been adopted at the Westminster Hospital to avoid the loss of carbon dioxide it was impossible to explain or to repeat their figures using aerobic methods of cultivation.

The microscopic picture of 19 cultures of disseminated sclerosis fluid differed in no way from the picture of normal fluids or of uninoculated material and no distinctive spherules had been found. His experiments, therefore, Dr. Carmichael concluded, failed to substantiate the work from the Westminster Hospital claiming the presence of a virus in cultures of cerebro-spinal fluid from cases of disseminated sclerosis. Miss Chevassut had been supplied with 32 unlabelled specimens of cerebro-spinal fluid, of which 14 came from cases of disseminated sclerosis and 18 from other sources. She failed to find the spherula in any of the former, but demonstrated it in one of the controls, a fluid from a case of chorea.

The Case for the Virus.

Sir JAMES PURVES-STEWART welcomed criticisms of Miss Chevassut's work, but thought that many of Dr. Carmichael's results which were at variance with hers were due to the use of different methods. The difference in the gold curve seemed more apparent than real. A positive gold curve did not necessarily prove the existence of a living virus. It was probably a mere concomitant phenomenon, the result of some toxin produced by the causal organism. Deficiency of metabolic and antitoxic liver functions indicated a toxic factor, but lævulose-tolerance tests by themselves were of little value as indicating deficiency of liver function unless accompanied by positive indican and glycuronic acid tests in the urine. It was not surprising that the two workers had obtained different pH results, since they had used different types of electrode; the experiments were not comparable. Dr. Carmichael had obtained negative cultures from 19 cases, but Miss Chevassut had examined 410 cases with a high percentage of positive results; Smith and Ransome[1] had secured positive cultures in

[1] THE LANCET, 1930, ii., 901.

9 out of 11 cases, and Zerkowitz, of Budapest, had secured positive cultures in 26 out of 28 cases. The problem called for further research.

Miss KATHLEEN CHEVASSUT said that the gold curve and lævulose-tolerance test had never been claimed as evidence for a virus. She had merely concluded that in disseminated sclerosis there was deficiency in the antitoxic and metabolic functions of the liver and that there was, therefore, probably a toxic factor. In her original paper she had stated that the precipitation of colloidal gold could not possibly be related directly to the presence of a virus, but had suggested that the factor might be some toxin or other product and that this possibility would be further investigated. She criticised Dr. Carmichael's method of preparing a gold solution and said that hers had been prepared by the original method of Lange. He had misunderstood her remarks on the gold curve; the point had been that in disseminated sclerosis precipitation almost invariably occurred first in the fourth tube—i.e., a dilution of 1–80—and that this tube usually showed the maximum precipitation. She had added that in any case the degree of precipitation was usually not greater than that indicated by the figures 3 or 4. Dr. Carmichael suggested that the lævulose might have been impure; it had been the purest obtainable on the market and the same as that used by Dr. Carmichael. A certain number of tests with galactose had confirmed the lævulose-tolerance test, and Dr. A. F. Hurst had further confirmed her results.[2] It was the correlation of three tests—the lævulose-tolerance test, the indican test, and the glycuronic acid test—which had led to the conclusion that the detoxicating power of the liver was deficient.

Experiments dealing with pH values were not proof of a living virus; she could not, therefore, agree that they were of more value than microscopical observations. The obvious fallacy in Dr. Carmichael's work was that he was attempting to measure the reaction of cultures without knowing whether they were cultures or not. Dr. Carmichael had discarded the hydrogen electrode method because it removed easily dissociated carbon dioxide from the mixture; this was the precise reason for which she had adopted it. It was obvious that carbon dioxide was bound to be lost, and the best method had seemed to be one in which this variable factor was removed. Then the experimenter was left with one factor only—viz., any variation in hydrogen-ion concentration induced by something specific in the cultures themselves. A little consideration would show that the prevention of loss of carbon dioxide would defeat the object of making the cultures, since the conditions of growth of an aerobic virus would not be fulfilled. Hartley's broth was a well-buffered medium, and this buffering capacity must be recognised if the experiments were to be understood. By Dr. Carmichael's method the shift to the alkaline side was made inevitable, and this would mask the slight change to the acid side, even if he were dealing with positive cultures, since change of reaction only occurs in an active growing culture. In her early work negative results had been so uniform as to be completely discouraging, and positive results had only been obtained when the somewhat difficult technique had been rendered much more perfect and the microscopic appearance in cultures had been established as the basis for pH experiments. Even in her early work she held the opinion that the occasional change of reaction demonstrable was valueless unless it could be correlated with either a microscopical appearance or some other property inherent in the culture. Dr. Carmichael had examined 19 cultures of disseminated sclerosis but of these only 11 fulfilled the condition laid down in her paper—namely, that the fluid must be cultured immediately after withdrawal.

[2] THE LANCET, 1930, i., 659.

DISCUSSION.

Dr. J. H. MARRACK said that it would be absolutely impossible to wash out all the carbon dioxide in a reasonable time; so long as the pH remained at 7·5 an appreciable amount of the carbon dioxide was free. Therefore experiments with the bubbling hydrogen electrode showed nothing. They did not show the pH of the fluid at the beginning or when all the free carbon dioxide had been washed out, but at some intermediate stage which varied with the conditions of the experiment.

Mr. J. E. BARNARD said he had examined eight of Dr. Carmichael's cultures and had failed to find anything unusual. He had seen something in Miss Chevassut's cultures that he had never seen under other circumstances, but she had done a very large number of experiments and he had seen a very small proportion of them.

Mrs. TOOKEY KERRIDGE spoke of the great difficulties of working with the hydrogen electrode, and said that Dr. Carmichael's method was the one most likely to give consistent results, because he would tend to lose a certain definite amount of carbon dioxide. Nevertheless, the errors seemed to go the wrong way: the pH would be expected to be more alkaline in Miss Chevassut's method. Dr. Carmichael's results did not suggest at all why Miss Chevassut's results should have shown an acid change.

Dr. J. G. GREENFIELD said that undoubted cases of sclerosis sometimes yielded normal cerebro-spinal fluid in the absence of any kind of treatment.

Dr. CARMICHAEL, in reply, said he had never met "the germ" that would give a pH reaction of 6·0, as Miss Chevassut had stated, and therefore he could not explain her finding.

Dr. J. PURDON MARTIN read a paper on

Chronic Subdural Hæmatoma.

He defined subdural hæmatoma as an encysted collection of blood between the dura and the arachnoid, and showed a specimen removed from a man of 58 who had been well until five weeks before his death, when he had woken up one night with an attack of vomiting. This had continued for several days with intermittent severe frontal headache. Thereafter he had gradually deteriorated mentally and physically. The relatives, when questioned, had said that he had fallen when getting off an omnibus about a year earlier but had not apparently sustained any injury.

These cases were uncommon but hardly rare, said Dr. Martin, and he would refer to six cases, three from his own experience during the last year. The pathology was puzzling; the blood probably came from a small dural vein torn by sudden dislocation of the brain within the cranium. The hæmatoma enlarged gradually, and by the time it caused symptoms usually extended over the frontal or parietal lobe. It was bilateral in about 40 per cent. of cases and some of the blood always remained fluid, probably being defibrinated by the pulsation of the brain. It was enclosed by two fibrous membranes containing numerous blood vessels and blood spaces containing blood from the general circulation, but no doubt contributing at times to the hæmatoma. As it enlarged the brain eventually became compressed or collapsed.

Five-sixths of the cases were men, and there was nearly always a history of trauma; age and other

causes of vascular degeneration also played a part. The condition was much commoner after 40 and in younger subjects the trauma was considerable, whereas in older men it might be negligible. Alcohol might have a subsidiary place in the causation. The latent period seemed to be shorter the more severe the trauma. The first symptoms were general: drowsiness, mental change and headache, leading gradually to coma. Focal symptoms, if present at all, were late and partial. Ocular signs were common. Diagnosis must be made without a history of trauma. Drowsiness might also be seen in cases of frontal tumour, but was seldom so variable or so rapid in its progress as in subdural hæmatoma. There was no general intracranial pressure, so that lumbar puncture would not reveal any abnormality. Papilloedema, however, had been reported quite frequently, and vomiting was not uncommon. Sensory defects were less common than motor. In about 10 per cent. of cases the urine contained albumin. If the condition was suspected, an exploratory trephining should be done; treatment was an evacuation of the hæmatoma and was usually successful at once. Occasionally the hæmatoma filled up again.

Dr. C. P. SYMONDS spoke of the difficulties of diagnosis and the need for exploratory operation in all suspicious cases. In three of his cases the patients had sought advice as much for the focal signs as for the drowsiness and headache. The ruptured vein was often one of the small vessels running from the brain to the superior longitudinal sinus. In two patients the earliest symptom had been shuffling and dragging of one leg with slow spastic paralysis and slight paralysis of the arm, corresponding with bleeding from such a vein. One of his cases had had flakes of fibrin in the cerebro-spinal fluid.

SECTION OF PSYCHIATRY.

AT a meeting of this Section on Jan. 13th, Dr. S. A. KINNIER WILSON, the President, took the chair, and Dr. ALFRED ADLER (Vienna) spoke on

The Structure of Neurosis.

The collection of experience, he said, did not make science; it was necessary to find the underlying principles, and these must be proved by logic, common sense, and experience. The first crucial problem was how mind experienced body; the new-born child was not rightly related with his body. The second crucial point was how experience influenced mind. The mind could not automatically develop all that it inherited because of the opposition of the environment. It was impossible to know what was an inherited mental ability, because in every step the child took there was interference—the interference of the mother; every attitude and behaviour of the mother impressed the child differently. It was possible that the child was free to respond as he wished to the impressions of the external world; it was impossible to predict how they would work. It was worth while to encourage good influences, as it was probable that the child would make a better response to good than to bad influences. The child was at the beginning of life, had possibilities that we could not estimate, and an active power in his own way.

Individual psychology, therefore, strongly emphasised the value of education. The idea of education had become less important owing to the stress laid on inheritance. Environmental influences were known to have different results, however much they were standardised, and therefore little credit could be given to a system that considered environment alone. After some time in a given environment a child found a way of life, with a definite direction It was impossible to consider movement without considering the goal; the child must have a goal. Adaptation was a useful word in psychology, and it was true that every individual had to adapt. But beyond each person's adaptation lay a different goal. Every human being was striving to overcome difficulties. Without trusting too much to metaphorical comparisons, this striving could be understood from a consideration of bodily development, which was also striving for a final form. This was the view that individual psychology had introduced under the term "finalism." Movement could only be understood by an understanding of the goal. The child, with his active power, built up form—a style of life—and this style was the creation of each child. Because each child created, we could not rely on a system which depended on causes and effects. The child was in the realm of uncertainty and guesswork, and in the many variations seen on each point the psychologist must look for individual development, and therefore individual psychology. The child's goal was how to conquer, how to become superior, to strive for completion, to adapt. After four or five years he had found this goal, had a certain prototype, a scheme of perception, an individual perspective, a certain degree of social interest towards others, and a certain degree of courage. He performed his tasks in his own way, assimilated with his own organs, digested with his own ability, and effected in his own way. No two individuals were identical in their conceptions, their perceptions, their feelings, their actions, or their thoughts; each of these belonged to the style of life created by the child.

THE NEED FOR SOCIAL INTEREST AND COÖPERATION.

Human beings were social beings; everybody knew this, but there were great differences in the expression of the knowledge. Social interest was the key of the psyche and of psychology. This could be understood from many points of view, perhaps the most convincing being that social interest was involved in every activity of life; the child had to coöperate with the mother from its birth. There must be somebody with whom he coöperated. All psychological functions were important from the point of view of this coöperation. The child, coöperating by means of his eyes, perceived and understood the world much better. In all life's failures the right degree of coöperation, of social interest was lacking. It was not a personal matter; all social failures had a private intelligence. To understand properly meant to have been told by the whole of experience that this was the way others would understand. The child thus brought up wanted to coöperate, and did not seek the pleasure principle alone. This ability to coöperate, this social interest, could and must be taught; of course there was an hereditary ability to develop it, but not a very deep one. It must be taught like history or geography. All the problems of life would need it, from the kindergarten onwards. The child not properly trained had a dark, uneasy feeling that he could not solve his problems, and behaved like a spoiled child that wanted to exclude everybody, like a man who could not pay.

TENSION PRODUCING SYMPTOMS.

Therefore a tension arose and vibrations spread all through the body; these appeared most at "weak spots" and caused diagnostic symptoms—a functional neurosis. His suffering spoke; it was a dialect of

the organs. Often the organs affected had some inherited or familial abnormality and often the endocrine function was altered. Fear might be shown by erection of hairs, disturbances of the bladder, quickened breathing, palpitation of the heart, or irritation of the sexual organs; but in each case there was a meaning to the symptoms. The patient in fear or tension excluded things from his life, but always suffered this tension, this striving for superiority, and so in social life began to use his symptoms. In practice there was no distinction between thought, feeling, and action, and the tension might arouse primarily thoughts or primarily feelings. The psychiatrist must always find the whole line leading to action, and understand how the patient had created a new way in which he could be adapted and could express his inferiority complex while finding a superiority. He was no better adapted socially, but he no longer felt himself falling down. In the structure of every neurosis would be found an attempt to become dependent on another and to make that other dependent on him. He had to prove that he must take this way, though he would prefer the normal way; hence the inevitable phrase of the neurotic: "Yes—but—." The neurosis could be traced back towards mistakes of the mother, perhaps, who had taught the child to build up his life in a dependent manner. All the social failures showed this lack of social interest and fear of coöperation. Confronted with the need for coöperation they felt as if they stood before an abyss Therefore, these people must never be pushed; they did not seek their solution as normal men but with a conviction of failure.

Neurotics had a peculiar degree of social interest; they did not want directly to hurt other persons but to make them dependent. Invariably they had been pampered dependent children, but this history did not appear until they were tested. Every case-history should, therefore, describe the situation in which the symptom had appeared. Love and marriage, for instance, immediately tested the individual's ability to coöperate, to build up a new future, and care for the partner. All neurotics were sensitive, because they were living in a world to which they were not adapted, and they always felt enmity. This sensitiveness was also found among problem children, suicides, and criminals. All failures, too, were always impatient; they had not the self-confidence to wait. Nevertheless, each neurotic differed from all others; each had created a masterpiece of art. Each expressed himself in an individual style of life and reacted in the same way throughout his life. This agreement in the whole life-style could be used for treatment, and also for prevention. If parents could be taught to prevent, that would be the best way, but those who needed it the most never saw the psychiatrist. Prevention could, however, be started at school, if the teachers looked out for faulty styles of life and shrinking from social interest. When the patient was adult, treatment lay in convincing him of his lack of coöperation, training him to coöperate first with the doctor, who replaced the mother, and then with others.

DISCUSSION.

Dr. R. L. WORRALL asked what was to be said to the suicide or criminal who ascribed his act to poverty.

Dr. ADLER replied that this could not be the real reason, for many poor people did not commit crime. These people lacked energy to attack someone else but suicide was a form of attack, of revenge. The whole style of life must be changed. The formula of the neurotic was "Yes, but—"; of the criminal "No"; the latter did not want to go the normal way. The neurotic could not form a gang; there could not be a society of persons suffering from anxiety, but the criminal had enough social interest to join others of his own way of life.

Dr. PARKES WEBER compared Dr. Adler's teaching to the old saying "know thyself." Everybody ought to recognise their inferiorities and be contented with those they could not remedy. He thought the English system of boys' education last century had done much to obviate the results of inferiority; public school boys had been taught to find their level. He asked what happened when a man could not react normally because of some purely physical disability—e.g., epidemic encephalitis, which he thought was as well explained by the theory of inferiority as by any other, the organ affected being the organ of the mind.

Dr. E. B. STRAUSS asked which of Kretschmer's two types was the normal temperament.—Dr. ADLER pointed out that there were mixtures and geniuses and failures of both types; it depended in each type on the amount of social interest preserved. —Dr. A. F. DOBBIE-BATEMAN asked at what stage the semi-sanity of all of us became neurosis.—Dr. ADLER replied that no general rules could be laid down; all individuals differed, but the degree of social interest was the best guide to the amount of neurosis.

SECTION OF OPHTHALMOLOGY.

AT a meeting of this Section on Jan. 9th, with Mr. ELMORE BREWERTON, the President, in the chair, a paper on

Cataract from Exposure to X Rays

was read by Mr. R. FOSTER MOORE. It concerned a patient in whom cataract was produced by exposure of the eyes to heavy doses of X rays during the treatment of sycosis on the face.

He was a man aged 28, and was seen by dermatologists because of severe sycosis of scalp, face, and neck, of three years' duration during which he had been to several hospitals, the treatment having included X rays, which the patient said made him worse. In this last treatment, because of certain risks attending X ray treatment, a signed statement was obtained from the man expressing his willingness to have the treatment. The disease affected the eyelashes as well as other parts of the face. The treatment lasted from February to June, 1927, and the total given was 12 Sabouraud doses. It completely cured the sycosis, and there had been no recurrence, but telangiectases gradually appeared, and had remained, apparently unchanged, until the present time.

In November, 1929, his sight began to fail, his acuity in March of that year being 6/12 in each eye; but since Christmas of that year he had been unable to read a book. In June, 1930, when Mr. Foster Moore saw him, the vision was only 6/60 in each eye, and there was a plaque-like opacity in the posterior cortex of each lens, while bordering this was a powdery opacity. The fundi were normal.

Last May Mr. Moore needled the right cataract, and in October Mr. J. G. Milner needled the other. The progress was uneventful, and after capsulotomy the acuity in the right was 6/6; absorption of the left was not yet complete, but was running a normal course. Most of the opacity was in the lens substance, adjacent to the posterior capsule.

The first case of this kind reported, said Mr. Moore, was in 1909 by Mr. Leslie Paton. In all recorded instances the dose of X rays had been heavy, and efficient protection of the eyes had not been possible. He commented on the length of time which elapsed between the exposures and the affection of the lens, two and a half years in the present case. He thought that, even when the eyelids needed treatment, a nicely adjusted shield would give the eye the necessary protection.

REVIEWS AND NOTICES OF BOOKS

Burns: Types, Pathology and Management.

By GEORGE T. PACK, B.S., M.D., Fellow of the Memorial Hospital, New York City; and A. HOBSON DAVIS, B.S., M.D. London: J. B. Lippincott Company. 1930. Pp. 364. 25*s*.

THE advent of tannic acid technique has doubtless stimulated much of the interest shown in America in recent years in the pathology and treatment of burns. Whether or not this new form of local treatment is epoch-making, as this and other transatlantic volumes declare, remains to be proved. A comprehensive and up-to-date survey of the subject is here presented in three sections; the facts about burns, the management of burns, and burns by specific agents. Chapters on the blood and urine changes, the complications, and on burns due to electricity, sun, radium, and war gases are particularly valuable. The numerous theories of the pathology and the equally numerous forms of treatment are all detailed; though the impartiality shown is praiseworthy, the book would have been more interesting if the authors had indicated their own preferences. But the insistence on the importance of primary shock, which has been belittled by some as a common cause of death, and on the necessity for the administration of fluids in toxæmia, a matter too often neglected, show that they are alive to the essentials; their views are basically sound, and this outweighs a lack of guidance among the multitudinous forms of local treatment. The sections upon care of the burn with a view to the prevention and limitation of deformity are admirable. A comprehensive bibliography follows each chapter.

Physiotherapy: Its Principles and Practice.

By F. HOWARD HUMPHRIS, M.D. Brux., M.R.C.S. Eng., D.M.R. & E. Camb., Hon. Consultant X Ray Physician to Christ's Hospital; and R. E. STUART-WEBB, M.B., M.R.C.S. With contributions by FRANK ROMER, M.R.C.S., A. E. HAYWARD PINCH, F.R.C.S., M.R.C.P., and A. GORDON WATSON, M.D. London: Jonathan Cape. 1930. Pp. 384. 15*s*.

ALL the important branches of physical medicine are considered in this book. The major portion, comprising about one-half of the volume, deals with the *principles* of electrotherapy, radiant heat, phototherapy, ultra-violet ray therapy, X ray therapy, radium therapy, massage and manipulation, spa treatment, and certain miscellaneous therapeutic agents—viz., melted wax, foam, carbon dioxide snow, and mechanical vibration. The sections on radium therapy, massage and manipulation, and spa treatment are by Mr. Hayward Pinch, Mr. Frank Romer, and Dr. A. Gordon Watson, respectively. The treatment of various diseases by physical methods is dealt with in a second part of the book, which comprises rather less than one-half. In this part the diseases of the different system of the body that are suitable for physical treatment are considered, and the authors describe the form, or forms, of treatment which they consider most suitable. This part is followed by a 34-page glossary of physical and medico-physical terms, and a short index.

In a book of this size it is manifestly impossible to devote to each branch of physical medicine the attention which its importance deserves. This applies more particularly to that part of the book dealing with *principles*, where 76 pages are devoted to electrotherapy and only eight to X ray therapy. It is likely, however, that there are many general practitioners of medicine who desire to acquire some information on the nature of radium therapy, mechanotherapy, hydrotherapy, and other forms of physical treatment without reading the text-books dealing with the subjects separately. A perusal of these text-books shows that there is considerable overlapping of the therapeutic fields of different forms of physical treatment, and the reader is left in doubt as to the treatment which he should prescribe. The authors of the present volume select and recommend the treatment which they consider the best. It is to be noted that electrical currents are most often prescribed, particularly those derived from the static machine. Dr. Humphris is a well-known exponent of the value of treatment by static electricity. Considerable importance is attached to the red and infra-red rays. It is said that the latter have a relatively high power of penetration, and that those which pass through water will pass through 3 cm. of body tissue before being absorbed. The meaning of the statement that "human heat may be said to be the absorption of infra-red rays in the body" is not quite clear. A description is given of a method devised by Dr. C. A. Robinson for subjecting the male urethra to diathermy in cases of gonorrhœa. It is not stated, however, that Dr. Robinson never attributed any value to diathermy in the treatment of gonococcal urethritis in men, and there is no reference to his work when the treatment of salpingitis is described. The results of his pioneer investigations on the use of diathermy in salpingitis were communicated to the Section of Electrotherapeutics of the Royal Society of Medicine over two years ago. There is no mention of his work on the treatment of pneumonia by diathermy in the pages dealing with that subject although by far the largest amount of work yet done in this country has been conducted by him.

The general practitioner will find much of interest in this book and some useful information will be gained in regard to the selection of forms of physical treatment for different diseases. It is written in an easy and colloquial style, and there are amusing passages. Writing on the treatment of overstrained voice by means of the "high-frequency vacuum current from the static machine," it is said that "this treatment has proved to be of great benefit to all sorts and conditions of men and women, from opera singers to political speakers and politicians of all parties."

Téléradiographie Stéréoradiographie.

By L. DIOCLES, Chef du Laboratoire de radiologie de la Clinique médicale de l'Hôtel-Dieu. Paris: Masson et Cie. 1930. Pp. 215. Fr.30.

IN this book M. Diocles gives an historical survey and a very detailed account of the principles of stereoscopy, and makes a strong plea for the extended use of stereoscopic radiography and telestereoscopy. He claims great advantages for this method, and maintains that the only reason for its neglect is the report of disappointing results which were due to faulty technique. He describes his own technique in detail and recommends stereoscopic radiography for all parts of the body. If some of his claims for the method seem rather too enthusiastic, he supplies much interesting information on stereoscopic work, including chapters on making reduced stereoscopic prints and stereoscopic projection. The book will be useful, because it contains much collected information which it would be difficult to find from other sources.

THE LANCET.

LONDON: SATURDAY, JANUARY 17, 1931.

DISSEMINATED SCLEROSIS AND THE SPHERULA INSULARIS.

TEN months ago we published an announcement by Miss KATHLEEN CHEVASSUT, Sir JAMES PURVES-STEWART and their collaborators[1] that they had isolated what they believed to be the organism of disseminated sclerosis, a filtrable virus which they named the *Spherula insularis*. At that time we observed that the proof of Miss Chevassut's contention "can hardly as yet be regarded as complete," that the work required for its confirmation must necessarily take many months and that "in the meantime the wise . . . will suspend judgment." Recognising the importance of the matter the Medical Research Council at once took steps to have the investigations repeated, and Dr. E. ARNOLD CARMICHAEL has devoted himself to an endeavour to confirm Miss Chevassut's findings. His work has been carried out at the National Institute of Medical Research, Hampstead, at the National Hospital, Queen-square, and at St. Bartholomew's Hospital. In view of the highly technical nature of the investigations involved he has availed himself of the assistance and criticism of the expert workers at these institutions. Dr. Carmichael has now presented the results of his labours, and we report on another page a paper which he read at the Neurological Section of the Royal Society of Medicine, and the resulting discussion in which Sir James Purves-Stewart and Miss Chevassut took part.

The questions involved are so technical that many present at the meeting must have found it difficult to follow the arguments. We make no apology therefore for recapitulating them. Dr. Carmichael first criticised the results of Miss Chevassut's investigation of Lange's colloidal gold test of the cerebro-spinal fluid and the lævulose-tolerance test, and Miss Chevassut replied to his criticisms at some length. These tests are, we believe, irrelevant to the main point at issue and we need not consider them further. Dr. Carmichael next described his investigation of the behaviour of the reaction of culture media to which had been added cerebro-spinal fluid from cases of disseminated sclerosis and from other cases as controls. Miss Chevassut, in her original paper, stated that a culture medium made up according to her method yielded a certain standard reaction, that this reaction persisted for a number of days virtually unchanged, that the addition of cerebro-spinal fluid from persons not suffering from disseminated sclerosis produced no change in the reaction, and that the addition of cerebro-spinal fluid from cases of disseminated sclerosis caused the reaction to become at first more acid and then to return to the alkaline side. In determining the reaction she used a bubbling hydrogen electrode. Dr. Carmichael states that media made up according to Miss Chevassut's directions do not yield a standard reaction, that the reaction of the medium does not remain unchanged, but becomes gradually more alkaline, and that this occurs equally when cerebro-spinal fluid from cases of disseminated sclerosis and when control fluids are added to the medium. In the determination of reaction Dr. Carmichael used a closed cell electrode. There is thus an apparent discrepancy between Miss Chevassut's and Dr. Carmichael's results. As Sir James Purves-Stewart pointed out, they were using different methods of determining the reaction of their mixtures and therefore their results are not comparable. Dr. Carmichael abandoned Miss Chevassut's method because he found that it led to frothing of the mixture. Miss Chevassut in reply said that she took precautions to prevent frothing. It is possible that the bubbling hydrogen electrode in Miss Chevassut's hands yielded more constant results than in Dr. Carmichael's. Dr. J. R. MARRACK condemned it as unreliable, but Mrs. TOOKEY KERRIDGE pointed out that the tendency of this instrument would be to render the mixture more alkaline, whereas Miss Chevassut's positive results consisted of a change to the acid side and were therefore inexplicable merely as products of faulty technique. It seems impossible to judge from verbal discussion the relative merits of the two techniques, for much may depend upon the precise way in which a worker carries out an operation. We cannot at present rule out the possibility that the difference between Miss Chevassut's and Dr. Carmichael's results may be due to differences of method. It is unfortunate that Dr. Carmichael did not persevere with Miss Chevassut's method as well as with his own in order to ascertain the results yielded by the two methods on the same material in the hands of one observer.

Dr. Carmichael failed equally to confirm Miss Chevassut's findings of the *Spherula insularis* in cultures of the cerebro-spinal fluid from 19 cases of disseminated sclerosis. Sir James Purves-Stewart in reply pointed out that since Miss Chevassut's original paper was published she had examined 234 more specimens with positive results in 89 per cent., and that SMITH and RANSOME had been successful 9 times out of 11 and a worker in Budapest 26 times out of 28. We thus encounter a further discrepancy of which no one present at the meeting offered any explanation. Dr. Carmichael finally explained that Miss Chevassut had been supplied with 32 unlabelled specimens of cerebro-spinal fluid; 14 of these came from cases of disseminated sclerosis, and she failed to demonstrate the spherula in any of them; she found it, however, in one of the control specimens which came from a case of chorea. This may be a crucial test, for on her own showing it should be possible to detect the fluid from a case of disseminated sclerosis by the presence of the spherula 9 times out of 10. It may be suggested that in the past the conditions of the test have been unsatisfactory. It is of

[1] THE LANCET, 1930, i., 552, 560, 612.

urgent importance that Miss Chevassut should accept Dr. Carmichael's invitation, more than once repeated, to carry out these tests under her own conditions at the National Hospital. It is highly unsatisfactory that three years after Sir James Purves-Stewart began to treat patients with vaccines of the *Spherula insularis*, and ten months after the discovery of the organism was announced, this simple issue should still be undetermined. Also it would seem an elementary step in the investigation of a supposed organism that living cultures should be supplied to the investigator for examination. That such an obvious course has not been taken calls for explanation. The responsibility of those who claim to make discoveries in medicine extends beyond the therapeutic applications of their work. They owe it to society to court refutation by putting all their resources at the disposal of their critics.

In conclusion, we must reiterate our opinion, first expressed last March, that the bodies described by Miss Chevassut, even if we concede their characteristics to the full extent claimed by her, have not yet been demonstrated to be the cause of disseminated sclerosis. In Dr. HANS ZINSSER'S [2] words, "We believe that the only possible way of being sure at the present time that a filtrable virus is present in supposed cultures is demonstrable virulence, and that to assume that any ultramicroscopic appearances in hypothetical cultures are the virus and then base immunological or therapeutic conclusions on the presence or absence of these appearances is merely creating a circle of reasoning that brings us no nearer solutions."

PROFESSIONAL DISCIPLINE IN PANEL PRACTICE.

TWENTY years ago this country adopted a system of national health insurance which took for granted the coöperation of the general practitioner. He undertook his share in the new national medical service not without certain misgivings, and it would be idle to pretend that time and experience have persuaded him that the system is now perfect. We are not here concerned with the political principles or prejudices which may emerge in a discussion of social services progressively provided by the State. Nor are we now considering the limitations upon medical treatment and clinical efficiency under the Act. We desire simply to refer to certain disabilities of professional control to which the general practitioner is exposed in health insurance work as contrasted with private practice. This is one of the points taken in the valuably constructive proceedings and report lately published by the National Health Insurance Acts Section of the Paddington Medical Society. Some of the recommendations from that report are set out on p. 166.

The medical practitioner has to comply with two standards—namely, that of the general law of the land and that of the rules of conduct peculiar to his profession. Failure in the latter respect may be hardly less serious for him than breach of the general law. Service under the national health insurance system sets him yet a third standard, a standard of skill, application, and conduct which is different from—and tends to be higher than—the standard applicable to the non-panel practitioner. Not only is this standard different, but it is differently enforced. General jurisdiction over medical practitioners is wisely entrusted to the General Medical Council under an arrangement with which the public, the law-courts, and the medical profession itself are substantially content. The special jurisdiction over the panel practitioner, on the other hand, is partly popular and partly departmental. The insured patient, reasonable enough in most cases, is sometimes ignorant, captious, and exacting. When he makes a complaint he is in a privileged position. The insurance committees which handle these complaints may contain a quite inadequate proportion of professional members. The rules to be applied—for instance, the basis on which excessive prescribing is calculated—are sometimes wooden and stupid. Finally, the Minister's ultimate decision, vital to the practitioner, cannot fail to appear arbitrary so long as no appeal to the law-courts is permitted, though the actions of the Ministry have always been taken with full sympathy for the profession as a whole. Since both panel practitioner and panel patient would prefer that their relationship should more closely approximate to that which obtains in private practice, one simple reform would be to remove the special disciplinary control to which the panel doctor is subjected. Allegations of improper certification are often made against the panel doctor. This is an issue with which the General Medical Council has always dealt in controlling general practice; why should it not deal with the same issue when the complaint arises in panel practice?

But the General Medical Council cannot be the recipients of all and every allegation against panel practitioners, nor are the decisions of that body more open to appeal than those of the Minister of Health. The difficulties implied by the introduction of the law-courts in defence of aggrieved practitioners is obvious, but this may be eventually found the only course to ensure justice.

RADIUM AND RESEARCH.

THE present position of radium therapy has been reached by processes typical of this country. It is the individual effort, which by its persistence brings into play the collective effort, that accounts for the widespread recognition of radium as a therapeutic agent. A few there were who, before the war, recognised that radium was of value in medicine, but the measure of its value could only be taken by people getting to work on it. The Medical Research Council were well aware of this situation when they started about 10 years ago their scheme of research into the medical uses of radium, really its use in cancer. A retrospect of this research, obtained by studying the Council's

[2] Zinsser, H.: Jour. Nerv. and Ment. Dis., 1930, lxxii., 655.

annual radium reports, leaves the reader in no doubt about the value of radium in the treatment of several varieties of cancer; it will also give him a good idea of the development of technique over this period. These reports have led to the recognition by almost every medical faculty in the country of the value of radium therapy as we now know it. But there are good reasons for believing that the scope of this therapy will be widened in the future. In the first place the country may be said to be fairly well off in its supplies. About two years ago the Committee of Civil Research, which went into the matter carefully, showed how badly supplies were needed everywhere, London being relatively the best off. Since then King Edward's Hospital Fund has distributed nearly 10 grammes of radium among twenty-four London hospitals (see p. 159) and something similar has been done for the country at large by the Radium Commission. Up to the end of the year just completed a total of over 20 grammes of radium has been delivered by the Radium Belge to the Commission, and has been tested by the National Physical Laboratory; 15 grammes of this have been sent to the various National Radium Centres and are in full clinical use there.

The cause of research in this subject has been helped by the governing bodies of individual institutions, by the Medical Research Council, and by grants in aid from the British Empire Cancer Campaign. The four big organisations named represent an enormous degree of support for the advancement, not merely of radium therapy, but of radiology generally; but if we are honest we must admit that in one respect we are not in a position to take full advantage of the potential help that here exists. In spite of the widespread medical uses of X rays and radium, the fact remains that there are few radiological laboratories in the country where research on the medical uses of these agents can be carried out. Opportunities and inducements for those wishing to do this kind of research are extremely limited. On the radiological side the lines of research being opened out are, broadly speaking, physical and biological, and their pursuit can best be undertaken in a radiological laboratory with suitably chosen personnel. It is not too much to hope that in the near future hospitals and other similar institutions will provide facilities of this kind. There is still an uncomfortable amount of truth in the gibe that the whole of radiology in its radiotherapeutic aspect lacks scientific basis and rests largely on an empirical footing. Perhaps it would be true to say that, although the selective action of these rays is a duly accredited scientific fact, the essential action of the rays on living forms is still a matter of conjecture. To admit this is to see the need for more research on such fundamental matters, and it may well be that the physiologist and biologist are just as likely to make contributions to such an issue as is the pathologist. There are dangers in widening, just as there are in narrowing, the scope of research, but it can hardly be doubted that for the development of radiology safety lies in the wider view. Far more knowledge is needed of the ways in which radium and X rays can affect the vital processes of the normal body before their effect on pathological processes can be rightly conjectured or rationally interpreted; such knowledge will come by the combined efforts of biologist and physicist. One of the happiest omens for this development, be it in the clinic or in the laboratory, is the mutually helpful attitude, recently expressed in several notable actions, of the four supporting bodies to which reference has been made.

PARLIAMENTARY REPRESENTATION OF THE UNIVERSITIES.

EVERY alteration in our national suffrage, as it has been made, has been designed or presumed to mark constitutional progress, in that the extension or limitation of the right to vote will dissipate an undue influence of wealthy or privileged persons. A measure to be introduced at the reassembling of Parliament would abolish the representation of the Universities, and will make its appeal to those who are particularly anxious to free parliamentary representation from the reproaches of class distinction and plural voting. It may be well to point out that the maintenance of the parliamentary representation of the Universities need imply no such abuses, while there are sound popular reasons for leaving the position of the Universities as it now stands. At any rate, an inquiry into the facts by a committee appointed to oppose this measure has resulted in a memorandum in which the situation is described as being quite different from that which it is generally believed to be. At the General Election in 1929 seven University constituencies returned 12 members with about 200,000 voters, but owing to extensions of franchise, created by the University constituencies themselves, these numbers will automatically and quickly increase, while the increase will be due mainly to the recruiting by the Universities of students from the secondary schools. In other words, so far as any plural voting is made possible by the University representation, it will not be a privilege enjoyed by the wealthier classes, but a recognition of an additional vote to men and women who have successfully passed through a course of higher education. But the word "additional" must be qualified by the fact that the University constituencies by reason of their make-up provide for the franchise of a large number of men and women who would otherwise be without a vote at all: it is not a question of plural voting in many cases, but rather of removing disenfranchisement. For the University voter can vote by post or by proxy, when he or she cannot by reason of avocation register a personal vote. Probably the vote for the University is the only one which many doctors are able to record.

THE MERSEYSIDE VOLUNTARY HOSPITALS.—The total expenditure of the Merseyside Voluntary Hospitals in 1929 was £322,064 and in addition £3288 for convalescent treatment and after-care. The total income from all sources (excluding legacies) was £268,753. The number of in-patients treated was 55,166 and of out-patients 203,148. The number of patients sent to convalescent homes was 1228. The penny-in-the-pound fund has 250,000 enrolled contributors, but the contributions fall short by £40,000 of the sum required for the maintenance of the contributors to it and their dependants, who together number about 750,000 persons. It costs about £80,000 a year to maintain them in the hospitals. Part of the sum thus required is obtained from the Hospital Sunday collections.

ANNOTATIONS

DIET IN DIABETES.

THE question of the most suitable diet in diabetes mellitus is a very difficult one. Since Allen's work in 1914 the proper amount of protein has been almost settled at about 1 g. per kg. of body-weight; (0·5 g. per lb.); but amounts of carbohydrate and fat vary widely. Before the discovery of insulin the carbohydrate was kept as low as possible, and some patients existed on 10 to 20 g. per day. The fat, on the other hand, varied from 100 to 200 g. or more. Even when insulin made it possible to increase the carbohydrate to 40 or 50 g. the fat intake was still kept very high by certain workers. During the last seven years the tendency has been to increase the carbohydrate to 60 or 80 or 100 g. in the day, and lately a plea has been put forward for complete reversal of the proportions of carbohydrate and fat.[1] Where a diet of 50 C., 70 P., and 250 F. (2817 calories) was sometimes given, the new diet would consist of 250 C., 70 P., 50 F., (1777 calories). At first sight it seems probable that so large an amount of carbohydrate will necessitate a great increase in the insulin dosage. Thus an increase of 200 g. of carbohydrate might be expected to call for 100 units of insulin. But McLeod and his co-workers showed in 1924 that the rule that 1 unit of insulin looks after 2 g. of carbohydrate is only correct when small quantities of carbohydrate are being given, and for large amounts of carbohydrate 1 unit may suffice for 4 g. Experience indicates that the extra insulin required to keep the blood-sugar normal on these large carbohydrate diets is often less than 1 unit for 4 g. and can subsequently be reduced still further. Although the diet at first sight seems large, its caloric value is really on the low side, and the principle of under-nutrition put forward by Allen is maintained. The clinical condition of patients so treated is described as very satisfactory, but one of the difficulties of deciding about the correct diet is that, since the introduction of insulin, patients look and feel well, no matter what they are eating. An observation on which Rabinowitsch lays emphasis is the decrease in the blood cholesterol. This may be as high as 1000 mg. on a high fat diet, but on a low fat diet is usually within normal limits, and may fall to 100 mg. One great advantage of the increase of carbohydrate is that the various substitutes for bread—whether the cheap variety of bran and gelatin or the expensive diabetic foods—are unnecessary and are no longer desired by the patients. On the other hand, a diet which contains so very little fat is somewhat unpalatable. In order to reduce the fat to 50 g. in the day the patient is required to abstain from all bacon, ham, or other fatty meats and cream, and to eat only 1 oz. of butter daily. These articles of food have been esteemed by diabetics and the deprivation therefore seems severe. Although the evidence in favour of the high carbohydrate and low fat diet shows that the patients keep well and require much less insulin, no evidence has been provided that they do better than on a diet which contains rather more fat and rather less carbohydrate. It may well be that the best diet is somewhere between the two extremes, but some years must elapse before this can be proved. Meanwhile the present changes constitute an advance, for the patient with diabetes need no longer make himself conspicuous by avoiding foods which contain carbohydrate.

[1] See, for instance, Joslin, E. P., A Diabetic Manual, 4th ed. Philadelphia (reviewed in THE LANCET, 1930), i., 1350); Rabinowitsch, I. M., Canad. Med. Assoc. Jour., 1930, xxiii., 489.

NEW WORK ON FILARIASIS.

ABOUT three years ago Colonel S. L. Brug found in the blood of man in the Dutch East Indies a sheathed nocturnal microfilaria which when stained with hæmatoxylin differed from *Mf. bancrofti* in the shape and nucleation of the tail and in the clarity of the anal pore; moreover, *Culex fatigans* resisted infection by it. He regarded it as a new species, and named it *Mf. malayi*. At a meeting of the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine on Jan. 6th Dr. Brug explained the present position in a valuable paper which was followed by an informative discussion. The intermediate or larval host of *Mf. malayi* has hitherto escaped detection; but Dr. Brug now reported that ready development occurred in two species of tæniorhynchus. Of *T.* (*Mansonioides*) *annulipes* used by him 93 per cent. became experimentally infected, and of *T.* (*M.*) *annulatus* 83 per cent.; in wild specimens caught in houses the similar percentages were 1·2 and 1·9. Development proceeds on lines very similar to those of *F. bancrofti* except that a caudal bunch of nuclei is formed, and a curious nail-shaped structure at the anus. Infection seems to cause a heavy mosquito mortality, an observation paralleled by that of P. H. Manson-Bahr on the non-periodical microfilaria of Fiji. It may be noted that the breeding-places of these mansonioides have hitherto eluded detection.

On the clinical side Dr. Brug found that infection with *Mf. malayi* was apt to be accompanied by elephantiases of the legs, and that with *Mf. bancrofti* by hydrocele; moreover, contrary to the ordinary experience with infection by the latter, in which infection microfilariæ are apt to disappear when elephantiasis comes on, *Mf. malayi* was frequently present in elephantiasis cases. This association between elephantiasis and *Mf. malayi* induced reference to the observation of V. T. Korke[1] that atypical forms of *Mf. bancrofti*—forms which Korke likened to *Mf. malayi*—were associated with elephantiasis, and the typical ones with hydrocele; a remark which drew from Dr. Brug the opinion that Korke had seen *Mf. malayi*, thus implying a belief that the newly separated form was widespread. In no case had Dr. Brug been able to obtain a post-mortem examination, so that no adult forms had been examined; their characters are accordingly unknown. In view of the commonness of filariasis it is surprising how few adult worms have ever been found and examined; these new observations are likely to alter this unfortunate position, and the search will no doubt take into consideration the findings of O'Connor and his colleagues[2] that the adult worms do not necessarily or perhaps mainly lie in the large lymphatics but are scattered or aligned in the limbs. As to the separation of elephantiasis and hydrocele on the ground that they are apt to be caused by different species of filaria, it is well to recall that H. W. Acton and S. Sundar Rao,[3] whose observations included Orissa, explained the different incidence of

[1] Indian Jour. Med. Res., 1929, xvi., 1023.
[2] See THE LANCET, 1930, ii., 409.
[3] Indian Med. Gaz., 1930, lxv., 620.

these manifestations which they found in different parts of India as being due to difference in the amount of infection which was being acquired. They inferred that in hyperendemic regions the first glands reached were severely damaged, resulting in elephantiasis usually of the leg, while in regions of low endemicity the main damage was in the juxta-aortic series with consequent hydrocele, chylocele, and lymph varix of the cord. These writers mentioned no difference in the morphology of the microfilariæ as being associated with the differing lesions. Moreover, Dr. Brug reported that, in villages where both kinds of microfilariæ were found, mixed infections occurred oftener than the laws of probability would suggest, which seems to imply that all factors are not yet known. It is only by their discovery that divergent views will be reconciled.

For many years nocturnal filariasis has been considered as a field with little scope for further morphological discovery. These helminthological observations by one who has made his mark in work on spirochætes, protozoa, and insects, and who modestly refused at the meeting to be considered as an expert on helminthology, shows what plentiful scope there still is for that individuality and wide view characteristic of Patrick Manson. Team-work is spectacular in the volume of its output, but here is yet another instance that it is no necessary prerequisite for the output of valuable, stimulating, and original work.

INTRAVENOUS ANTISEPTICS FOR UTERINE INFECTION.

THE treatment of puerperal sepsis and uterine infections is generally considered to be purely local so far as antiseptics are concerned. At a recent discussion in Dublin Dr. R. J. Rowlette definitely said [1] that in no condition of bacterial infection was there any reason to suppose that antiseptics introduced into the blood stream had any value, and that the only useful systemic method was vaccine or serum. This statement may be considered unduly pessimistic in the light of recent work of Dr. Joseph L. Meyer [2] at the Northwestern University Medical School. He records the results of a number of experiments on dogs. The abdomen was opened and both uterine horns were ligated with double silk ligatures near the body and at the fimbriated end, to prevent discharge of pus into the vagina or the abdominal cavity. A bacterial culture (1 c.cm.) of staphylococci, streptococci, or colon bacilli obtained from patients was introduced by a syringe into the left horn just below the fimbrial ligature. The needle was passed diagonally through the musculature and then parallel with the mucosa before entering the lumen. This made a valve-like opening which prevented leakage in most places. Acriflavine, 1 c.cm. of a 1 per cent. aqueous solution per 10 pounds of body-weight, was injected either immediately or 24 hours or 48 hours after the operation. This dose is about one-half to one-quarter of the amount generally used in therapeutics.

The results were quite striking when the dye was injected immediately after inoculation, but of course the experiments were not applicable to human pathology, as the practitioner is not aware of infection until symptoms appear. Temperature records showed that symptoms were present 24 hours after inoculation, and even when the treatment was instituted at this time it had a distinctly beneficial effect. The average temperature of the treated animals was definitely lower and dropped by lysis. When acriflavine was injected 48 hours after inoculation there was also a beneficial effect, though a less marked one. These experiments are comparable with the conditions of practice, except that the number of organisms introduced was probably greater than would occur in an ordinary puerperal infection. After 24 hours there is a rise in temperature and the mucous membrane of the uterus is deep red and swollen. The control animals showed a remarkable difference in pathological conditions from the treated animals; the uteri of the former were more than twice the size of those of the treated group, and intensely swollen and engorged. In some cases sterile cultures were obtained from an infected horn after acriflavine treatment. According to Dr. Meyer's results intravenous acriflavine in appropriate doses would be worth trial in early cases of uterine infection.

[1] THE LANCET, Jan. 10th, p. 77.
[2] Amer. Jour. Obstet. and Gyn., 1930, xx., 760.

MALARIAL TREATMENT OF GENERAL PARALYSIS.

FEW therapeutic innovations have been so hotly discussed as the non-specific treatment of general paralysis, and a recent survey by Prof. Wagner-Jauregg, the pioneer of this method and the exponent of malarial treatment in particular, is therefore of special interest. [1] The danger of malarial treatment, he says, is a thing of the past. The intracutaneous injection of malarial blood reduces the incidence of the severe quotidian type of fever, and the likelihood of inducing the desired tertian type is still further increased if the blood belongs to an incompatible group. The attacks can be stopped with quinine or plasmoquine—though this latter drug establishes tolerance in the parasite—and the course can, if the patient seems to lack stamina, be given in two parts, separated by specific treatment and re-education. The range of contra-indications has therefore been greatly reduced and age is no longer a bar to treatment. The efficacy of the method can, of course, only be judged by the increase it produces in the number of remissions. Rear-Admiral Meagher's figures, taken from English mental hospitals,[2] which Prof. Wagner-Jauregg quoted, are certainly impressive but, as the Viennese worker points out in another connexion, it is not scientifically accurate to match results from one group of hospitals against results from another. Nevertheless, as evidence of the permanence of the remissions, he adduces three patients who were discharged after treatment in 1917, of whom two are still well and the other has died, free from paralysis, in 1928 of an intercurrent complaint. Moreover, Dr. Dattner's results from the Vienna Psychiatric Clinic, which Prof. Wagner-Jauregg describes as unique in their scope and accuracy, show that out of a total of 129 patients treated between 1922 and the beginning of 1924, 53 are still enjoying full remission and capable of following their occupations. But for unconnected intercurrent disease the number would, he says, be 57. According to Dr. Dattner, the reaction of the cerebrospinal fluid becomes negative or weak positive in many of even the unbenefited cases. Prof. Wagner-Jauregg quotes the observations of Sträussler and Koskinas that the brains of paralytics who had died during treatment showed an unusual increase in the

[1] Münch. med. Woch., Jan. 2nd, 1931, p. 4.
[2] See THE LANCET, 1929, ii., 402, 671.

inflammatory and proliferative processes, and states that those who die some time after the treatment show considerable retrogression of the inflammatory symptoms. Unfortunately, the number of patients in full remission coming to necropsy through intercurrent disease is very small, but the finding of Sträussler in one case is certainly interesting: that paralysis could not have been diagnosed on anatomical grounds without knowledge of the history. Prof. Wagner-Jauregg is, however, perhaps a little optimistic in his belief in the possibility that injected malaria may produce a pathological cure. He points out that the behaviour of the spirochætes in treated patients has not yet been pathologically investigated, but that, according to the best authorities, they probably vanish from the nervous system of patients in full and long-standing remission.

Prof. Wagner-Jauregg reviews the other methods of non-specific treatment. Having tried and discarded most of the non-bacterial methods many decades ago, he has little to say of them except to speak generously of sulfosin, the rival which Dr. Knud Schroeder has prophesied will take the place of infection-therapy. Rat-bite fever, he thinks, may become a useful alternative to malaria in certain patients. Meanwhile, he considers, malaria holds the field, and as a prophylactic in patients with a persistently positive cerebro-spinal fluid is unmatched. In dealing generally with other methods, he points out the obvious fallacy which handicaps the discussion of nearly all of them: the smallness of the groups treated, the absence of controls, and the assessment of results far too soon after treatment. He states, quite justly, that it is not fair to compare the results in different institutions and that, in the presence of a remedy which has proved itself to be at least of some potential value, the experimenter is not justified in leaving a number of cases untreated to serve as controls of the progress of a group treated by a new method. He makes a strong plea for what he has termed "simultaneous research": the treatment of a large number of alternate cases by two methods in the same institution, and the observation of the results over a period of some years.

RADIOGRAPHY OF THE LIVER AND SPLEEN.

THE astonishing success of cholecystography prepared the way for the new method of "excretion urography" by which opaque substances are injected intravenously and photographed with X rays when they reach the urinary tract. It appears that means have now been devised for defining the outline of the liver and spleen in similar fashion. Hitherto radiologists have used artificial pneumo-peritoneum for exact definition of these organs, but the procedure described by Dr. P. Radt at a recent meeting of the Berlin Medical Society has advantages beyond its greater simplicity. It is based upon the fact that the reticulo-endothelial system, comprising especially the reticular and endothelial cells of the spleen and the Küpffer cells of the liver, have the property of taking up certain foreign colloids in a selective manner. These substances, therefore, tend to accumulate in the liver and spleen, and a search was made for one which was opaque to X rays. Radt employed first, tordiol, which is a thorium-dioxide "sol," and later a preparation in which it is combined with carbohydrate. This compound is stable and is not precipitated by the body fluids. After numerous animal experiments he injected it intravenously into 20 patients and reports that there were no serious ill-effects though occasionally there was slight malaise, with fever and shivering for a few hours. Animals injected as long as one and three-quarter years ago have remained in perfect health, and in the patients examined no changes have been found in the blood or urine except a slight temporary mononuclear leucocytosis and transitory fall in hæmoglobin. The films reproduced by Radt in his paper[1] show clear shadows of the liver and spleen. In cases where the normal structure of these organs is grossly altered the colloid has not been taken up and the shadows are indefinite. This happened, for example, in cirrhosis of the liver where the excessive fibrous tissue failed to take up the thorium. Again, where there are secondary deposits in the liver, clear areas are seen in the position of the metastases, and films illustrating this are characteristic. The spleen shadows seem to be of assistance in outlining size and shape rather than structure. The preliminary accounts of this new "hepato-lienography" suggest advancing possibilities in radiological diagnosis, but until we know more about the most suitable colloid there is evidently need for caution.

REGULATION OF BLOOD DONORS IN NEW YORK.

SINCE Landsteiner published his work on iso-agglutins in blood the practice of direct blood transfusion has widely increased, and in New York it led to the establishment of a number of commercial agencies whose purpose was to provide persons prepared to act as blood donors. This development did not escape the watchful eyes of the city health department, which under Dr. Shirley W. Wynne maintains the high reputation inherited from the administration of the late Dr. Hermann Biggs. Inquiries were made which showed that some of the agencies exercised little control in the selection of the donors, being chiefly interested in profit-making; donors unsuitable for particular cases were provided, and it is stated by the Health Department that several were found to be infected with syphilis. The Department conferred with representatives of the medical profession, hospitals, and reputable blood donor agencies, with the result that the City Board of Health on Nov. 21st of last year added to the city's sanitary code a set of regulations which will enable the New York health authority to exercise suitable control. For the purpose of the regulations a blood donor is defined as a "person who holds himself out as willing to dispose of his blood, or who offers his blood, or whose blood is used for transfusion purposes for a fee;" while the definition of a "blood donor agency" is "any office, registry, place or establishment which employs, engages or supplies or advertises or holds out to employ, engage or supply any person or persons whose blood is or may be used for transfusion purposes." Under the regulations it is illegal to act as a blood donor without a certificate of registration issued by the Department of Health, or otherwise than in accordance with the regulations. It is also made illegal to "conduct, maintain or operate" a blood donor agency without a permit from the Board of Health, and the agency must conform with the terms of the permit and with the regulations. The action taken by the New York Board of Health affords another instance of the wide legislative powers in relation to public health with which American cities have been entrusted. In this country it would be necessary to pass an Act

[1] Med. Klin., 1930, xxvi., 1888.

of Parliament to secure the control over the practice of commercial blood donors which in New York has been effected by means of regulations made by the City Board. And it is noteworthy that the Board did not make this extension of the law until the question had been fully explored in conference with the medical profession.

A COMMITTEE ON NUTRITION.

THE Minister of Health has appointed a committee to advise him on the practical application of modern advances in the knowledge of nutrition. The members are: Prof. Major Greenwood, F.R.C.P., F.R.S. (Chairman); Prof. E. P. Cathcart, M.D., F.R.S.; Sir Gowland Hopkins, F.R.C.P., P.R.S.; Miss Jessie Lindsay; Prof. E. Mellanby, F.R.C.P., F.R.S.; and Prof. V. H. Mottram. They will hold office until Dec. 31st, 1933, and will then be eligible for reappointment. The Secretary of the Committee will be Mr. F. R. Hudson of the Ministry of Health.

WORK OF THE ROSS INSTITUTE.

THE industrial antimalarial committee of the Ross Institute has lately reported on interesting work which it has done in different parts of the world. At the Institute's Assam branch Dr. G. C. Ramsay, after dissection of about 50,000 anopheles, believed to be a world's record, found that practically only *A. minimus* was infected. It requires for breeding, clear, slowly running water exposed to sunshine. By applying to such water oil or Paris green, or by growing suitable shade-producing plants there, sickness was reduced, the drug bill halved, and the efficiency of the labour force doubled. A note of the actual balance-sheet concerned would make a valuable addition to the report; at all events the change took place after "bonification" had proved a great disappointment. Malaria, and not hookworm infection, is the primary cause of anæmia here. Ramsay's statement that there is no relationship between hookworm infection and the amount of sickness in his gardens is not likely to prove correct. When the power loom replaced the hand loom the effect was too striking for it to be realised that later the question of four or eight looms to a weaver would be a crucial economic one; but the economic truth was always there. When the main source of local anæmia, the plasmodium, is under control, the hookworm will doubtless show itself as an economic handicap as heavy in Assam as in those other parts of the world where apt tests have been made.

The Institute has been active in South Africa. Since its expedition to Northern Rhodesia the malarial incidence is said to have fallen in one mine from 27 per cent. per month to eight cases per month in a total population of between 8000 and 10,000. Sir Malcolm Watson found that some swamps in Natal and Zululand were free from malaria and some not, a puzzling problem which will not be solved till the local anopheline host has been determined. In conjunction with the Shell Trading and Transport Company work is being carried out in Burma to determine the best larvicidal oil mixture for use in hot or in cold weather, for places where the water vegetation should be killed, and for those where it should be destroyed. Sir Malcolm, after drawing attention to the warning note which we sounded soon after the introduction of plasmoquine,[1] states emphatically that this drug is no substitute for quinine, and holds that much more detailed work is needed before it can, for example, be concluded that it does in fact kill gametocytes, seeing how widely these vary in numbers from day to day in peripheral blood. Another striking tribute to the Institute refers to the effects of control measures advised by Sir Malcolm at the Noamundi Mine of the Tata Iron and Steel Company. In the Noamundi mine blackwater fever has disappeared and all primary malaria cases are believed to have been eliminated. Colonel R. Knowles, I.M.S., questions whether even in Panama anything like it has ever been seen. But it seems a somewhat ungrateful return for such unstinted praise to refer in the report of the meeting to the venerable and distinguished publication of which he is joint editor as the *Indian Medical Journal*.

These are some of the Institute's useful activities. There can be no better indication of its appreciation of the world's needs than the remark of the chairman of the committee that research and practical work on the malaria problem are almost in their infancy.

[1] THE LANCET, 1928, i., 87.

MILK AND THE GROWTH OF CHILDREN.

THE value of regular additions of milk to the ordinary diets of school-children has been demonstrated once again in a test carried out with 20,000 children attending schools in Lanarkshire.[1] The arrangements were in the hands of the Department of Health for Scotland and the education authority of the county of Lanark and were assisted financially by grants from the Empire Marketing Board and the central advisory committee of the Distress in Mining Areas (Scotland) Fund.[2] The heights and weights of all the children were measured by a special staff of doctors and nurses at the beginning of the feeding period and again at the conclusion of the experiment some four months later. The whole of the milk used belonged to category Grade A (tuberculin tested), one-half of it being given raw and the other half pasteurised. In each school one-half of the children acted as controls, the other half receiving ¾ pint of either raw or pasteurised milk. The results of the test support the conclusions reached by other workers—namely, that additional milk definitely accelerates the rate of growth as measured by increase both in height and in weight. The differences between the milk groups and the control groups were small, as would be expected in a test lasting only four months. In most of the age-groups the average increase in weight was 4 to 6 oz. more in the children receiving milk than in the controls, and the average increase in height was about one-tenth of an inch more in the milk groups. Boys and girls exhibited on the whole the same degree of improvement and the older children (7–11) showed quite as much improvement as the younger ones (5–6). No significant difference was observed between the growth-promoting effect of raw and pasteurised milk. No statistical evidence of any effect of the milk other than that on growth was recorded, but the school teachers formed the impression that the physical energy and animal spirits of the milk-fed children were stimulated so that they became more boisterous and difficult to control. Some of the teachers expressed the opinion that an increase in mental alertness was noticeable as the result of giving milk, especially among the

[1] Milk Consumption and the Growth of School-children. Report on an Investigation in Lanarkshire Schools. By G. Leighton and P. L. McKinlay. Edinburgh: H.M. Stationery Office. 1930. Pp. 20. 3*d*.

[2] See THE LANCET, 1930, i., 417.

younger children. The results of the test support the policy of the Education (Scotland) Act of 1930, under which local authorities are empowered to supply graded milk to school-children. It is expected that this power will be widely used in the near future and will result in a noticeable improvement in the physique of the Scottish race. Incidentally it is hoped that the great increase in the consumption of graded milk which would result from the general adoption of the scheme of giving a regular supply to school-children will encourage the production of milk free from tubercle bacilli throughout the country.

THE THERAPEUTIC USES OF IRON.

THE pursuit of new drugs should not lead to the neglect of old ones, as Dr. Philip Hamill, who took the chair at the Section of Therapeutics of the Royal Society of Medicine on Jan. 13th, pointed out when opening a discussion on the therapeutic uses of iron. Dr. L. J. Witts, who had been investigating the effects of iron on chlorosis in young persons, and on chronic microcytic anæmia in those of middle life, was able to place his conclusions before the meeting. Chlorosis, he finds, responds readily to treatment with iron and ammonium citrate, the patients sometimes showing an increase in hæmoglobin from about 38 to 85 per cent. over a period of 6 or 7 weeks; relapse is rare. The microcytic anæmias of middle life are usually associated with absence or diminution of hydrochloric acid secretion, glossitis, splenomegaly, and, in some cases, dysphagia. He found that 17 patients with anæmia of this type recovered on doses of grs. 60 to 120 of iron and ammonium citrate given daily over a period of 4 or 5 months. Those treated with doses of less than grs. 60 showed no definite improvement, and he does not recommend reduction until the hæmoglobin has risen to a normal level; as there is a tendency towards relapse in these cases the patient should persist with a maintenance dose of not less than one-third of the curative. A lag of about a month is to be expected before the treatment begins to show any result. Another aspect of the chronic microcytic anæmias was discussed by Dr. D. T. Davies; he mentioned the high viscosity of the gastric juice and the reduction in pepsin which accompanies the hypochlorhydria or achlorhydria. After giving histamine to patients with microcytic anæmia he had found an increase in pepsin and a fall in the gastric pH consequent on the appearance of more hydrochloric acid. He thought that some form of gastritis might underlie the condition, which was possibly an alimentary rather than a blood disorder. The meeting agreed with Dr. Witts in his view that liver or stomach extracts failed to provoke a reticulocyte crisis in anæmias of the chlorotic and microcytic types, and this led to the consideration of the value of iron in pernicious anæmia. Dr. Janet Vaughan had observed cases in which Addisonian anæmia was associated with a mild iron deficiency; in a certain number of these the addition of iron preparations to liver treatment led to an improvement in the blood count. Dr. Izod Bennett was able to confirm this. He referred to the origin of liver therapy; liver had been employed, in the first place, because it was rich in iron; now the iron-free liver extract was given and was found to be equally effective. He thought it conceivable that it was not the iron and ammonium citrate which produced recovery in chlorosis but some impurity in the preparation, such as copper; Dr. Witts, however, thought the proportion of copper present insufficient to have a therapeutic action. The value of the ferrous salts was emphasised by Dr. Witts and Prof. J. A. Gunn; they were effective in much smaller quantities than the double salts, gr. 4 being a suitable dose for an adult, and they usually produced good results within six weeks of the beginning of treatment.

Dr. Helen Mackay said she had given iron preparations to infants during the first year of life and had found that it was well tolerated if the initial dosage was small. Given to a series of artificially-fed infants, iron had occasioned a remarkable rise in hæmoglobin as compared with control cases. Anæmia was found to be common in breast-fed as well as artificially-fed infants, showing that no one particular method of feeding was at fault. Infants small at birth grew relatively more quickly than others and showed a greater tendency to anæmia. Dr. Mackay drew attention to the spontaneous and temporary rise of hæmoglobin which occurred in all infants between 2 and 7 months of age, and which made caution necessary in estimating the results of the iron treatment during that period. In addition to the improved hæmoglobin content, Dr. Mackay was able to demonstrate two other effects of iron when given to infants. The first was a reduction in illness amounting to a diminution by one-half of the attack-rate in the children receiving iron as compared with those untreated. The second was a marked increase in the rate of growth of those treated. Dr. Bradford Hill, as a statistician, confirmed her figures; those dealing with the attack-rate he had investigated with great care, but could not find a source of error.

STAFFING MUNICIPAL MATERNITY HOMES.

THE question whether practitioners are to be allowed to deliver patients confined in municipal maternity homes has arisen in an acute form in Birmingham. Until recently the family doctor who had given antenatal supervision was summoned when labour set in, but in the view of the local Maternity and Child Welfare Committee the variation of standards and methods of treatment adopted by private practitioners involves an element of risk, and it is now proposed to appoint full-time medical officers as accoucheurs. Obviously it is easier to ensure smooth and efficient work if all labours in one home are conducted under one direction and responsibility, but convenience alone should not, we feel, be the main consideration. If the science and practice of obstetrics is to make progress, continuity of observation and service from early pregnancy until the puerperium is essential. In the past, when far more reliance was placed on pelvic measurements as a factor in prognosis, careful records of antenatal examinations were valued as impersonal documents. Nowadays the dimensions of the pelvis alone are known to be a poor guide to the prospects of an easy labour and the estimation of relative size of fœtal head and pelvic outlet is recognised to be difficult; nor, in cases where toxæmia is suspected, do the results of periodical tests of urine reveal clearly the outlook unless they are correlated with other circumstances by a trained observer. Only experience in following up cases can teach judgment; little can be learnt on the one hand from antenatal observation which is cut short at the crucial moment, or on the other from skilful management of abnormal conditions whose genesis is obscure. It is therefore greatly to be hoped that in Birmingham as elsewhere a way will be found to prevent practitioners who have recommended their patients to seek admission to maternity homes for confinement from being penalised by having to relinquish their responsibility.

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

III.—HOW THE MIND WORKS.

THE DEVELOPMENT OF MIND.

IT is easier to understand the symptomatology of mental disorders if we have a clear picture as to how the mind has developed and of what parts it is composed. The ordinary conception of "mind" is that it is solely concerned with processes of conscious thought, but a little consideration will show that this is not true. A great deal of the difficulty which we experience in understanding ourselves and our patients is due to this erroneous conception that mind is only occupied with conscious thinking processes. It is for this reason that the term "unconscious mind" has proved such a difficult one to understand. If "mind" was "consciousness" how could there be such a thing as an unconscious consciousness? But is mind only consciousness, and if it is more than that, what is it?

Let us begin with the broadest view of the initial development of the nervous system. With the progress of differentiation of function, it became increasingly necessary for the organism to evolve a central selective station which might inhibit certain impulses whilst promoting others. In the ordered interaction of the nervous system, the different parts of the human organism are enabled to perform their work as units coöperating in a team. For example, the lungs and the organs of digestion, by co-relation and inhibition in the nervous system, perform in health their functions harmoniously and "unconsciously." Consciousness of the existence of a certain organ is usually a sign that that organ is in a state of disorder.

On a level above that of the coördinative and inhibitive cell stations we have the field of emotion. We may describe an emotion as a feeling associated with a wish or need. Primarily, emotions are associated with instincts, and although psychologists are not agreed as to what exactly the fundamental instincts may be, they are agreed on the general principle that instincts and emotions are, as it were, two points of view of an internal tendency to behave in a certain way in response to a certain stimulus. For instance, with the development of a need for nourishment on the part of the tissues a feeling of hunger is felt, and the behaviour of the organism then tends to be directed in such a way as to satisfy the need for food. The need is felt and, other needs being in agreement, the hunger feeling can be satisfied. On a higher level than that of the nutritional may be cited, as an example, needs associated with a feeling of fear and the organism's resultant behaviour. The feeling of fear is associated with a need for the preservation of the organism from the threat of the apprehended danger. Behaviour may be directed either towards escape or towards overcoming the threat. Other impulses, such as nutritional, then undergo inhibition and the activity of the organism is centred upon its reaction towards danger.

Another example of an instinctive feeling is that associated with sex. The urge of propagation, with its elementary biological function of preservation of the species, is liable to overcome in its intensity all other impulses, except those of self-preservation.

In animals and simpler organisms, what we understand as consciousness is either non-existent or only present to a very minor degree. Much of their behaviour is conditioned by simple reflexes or habit into which consciousness does not enter. Self-consciousness, the awareness of the self as an integral individual distinct from other individuals, is one of the earliest forms of consciousness and one of the least highly developed. Awareness of alternative courses of conduct, with its inevitable conflict with other impulses, only arises in a late stage of human development, and it is the beginning of a further extension of the field of consciousness. Ultimately it is enlarged to include not only the awareness of concrete external objects and internal impulses, but also a discrimination of abstract ideas of which the variety is almost without limit. Such development takes place through associative paths, in which a series of links is developed as a comparison with and extension from past experience. All later experience is, therefore, more or less intimately associated with something that has previously happened. Whilst it is entirely new, experience has no meaning for us at all, and it is only through its association with past experience, with something old, that it has *meaning* or *value*.

A simple way of understanding the problem of mental development is to relate it to the rings which develop, year by year, in the cross section of a growing tree. The central ring is the oldest part of the tree and successive rings represent the "experience" of the tree year by year. In the accompanying diagram (Fig. 1) there are five rings which may be taken as representing the development of the human mind, but not in periods of years. Each ring represents a successive stage of development by experience. The central, most elementary and oldest ring is that of the *coördinative reflex cell stations* in the brain—e.g., those which control the action of the physical organs of the heart, lungs, &c. The second ring is that associated with the *instinctive-emotional* life. It is the centre associated with energy and movement, the wishes and needs of the organism in its relation to life and experience. The third ring represents the development of *qualitative* feelings. Life and experience at this stage have definite feeling values, feelings of pain and pleasure, good and bad, but the level of such feelings can hardly at present be called "conscious." It is in the next stage that a further

FIG. 1.

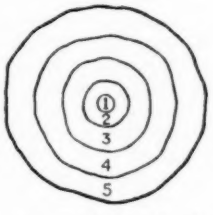
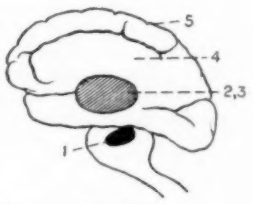


Diagram illustrating development of the brain.

1. Coördinative cell stations.
2. Dynamic level—instinctive.
3. Emotional level—feeling states.
4. Pictorial level.
5. Abstract rational level.

FIG. 2.



The brain. (Semi-diagrammatic.)

* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. The first and second lectures of the series appeared on Jan. 3rd and 10th, 1931, respectively.

differentiation of feeling values takes place at what is called the level of "*picture-thinking*."

At this stage awareness of an external world sees experience and external stimuli in terms of crude concrete objectiveness. Discrimination has picked out certain outstanding objects and endowed them with their own feeling tone. Consciousness is, at this level, becoming differentiated, but it is concrete, pictorial, symbolical, and always associated with a strong feeling tone.

The last level is arrived at with the outermost ring, which is called *rational*. At this point awareness of an external world has become differentiated into a realisation of the finer distinctions and comparisons. The feeling tone is less and symbols have become split up and qualified so as to be abstract vehicles rather than concrete pictures, and this represents the level of intellectual consciousness.

Fig. 2 shows this principle applied to the various levels of the human brain.

(1) Indicates the central coördinative cell stations concerned with organic function (medullary ganglia).

(2, 3) The basal ganglia which are probably associated with the fundamental "energy" of life and with emotional states. It is interesting, and it should make us tentative in all our conclusions, that we are still entirely unaware as to what the source of the dynamic of life may be, or as to the manner of its operation. But general indications are in favour of the basal ganglia having something to do with it and, as long as it is only held as a working hypothesis to be abandoned as soon as anything better or more certain takes its place, there is no harm in the tentative acceptance of this as being true.

(4) The deeper layers of the cortex indicated by (4), with all their associated paths to the basal ganglia and different parts of the cortex, possess a larger and a cruder type of cell than the superficial layers of the cortex and may perhaps be assumed to function in the way described as "picture-thinking."

(5) This is the superficial layer of the cortex in which the higher, more abstract, processes of reason take place, but each successive higher level can only be understood as being derived by a process of differentiation and modification from earlier and more primitive methods.

The Function of Thinking.

Those who are accustomed to think of the function of the mind as being entirely conscious naturally make the mistake, since they are aware of the dynamic quality of life, of thinking that consciousness is the centre of dynamic activity. It is not. The function of consciousness is selective and it probably possesses no energy of its own. *The energy of life is to be found in the deepest levels which are prior to and primarily independent of consciousness.* This is the level of instinctive wishes or needs, and it is not *necessary* for these to enter consciousness. Many are dealt with by an automatic process without entering consciousness at all. Some, which originate in a distant racial past, do not enter consciousness because they are not related to any individual consciousness of "now." Others enter consciousness as *wishes* and the function of consciousness is to determine how the wish may be gratified in the most satisfactory way without causing trouble. The function of consciousness, then, is selective and adaptive, but it is not dynamic. *It is a means to an end and not an end in itself.* The end, from one point of view, is the gratification of the instinctive wishes and needs which activate human behaviour. From another point of view, consciousness may be said to provide a channel for the fullness and freedom of emotional self-expression. In any case its selective function is to fulfil the needs of life without conflict or discord. The "will" may be defined as that part of the individual's instinctive energy which enters consciousness and is directed towards unity, freedom, self-gratification, and self-expression.

THE SAVAGE, THE CHILD, THE NEUROTIC, AND THE GENIUS.

It is to be expected that the minds of the child and the savage would show something in common, since the savage is phylogenetically infantile and the child is ontogenetically primitive. The fifth layer in both, that of abstract reason and higher synthesis, is as yet not fully developed. In consequence, the layers associated with uncoördinated wish fulfilment, with a strong emotional content and a tendency towards pictorialising, are those which we would expect to find most in evidence. Both in the primitive mind and in the mind of the child the activities are mainly those of wishing, feeling, and picturing, without strong rational or coördinative development.

It is now necessary to define what we mean by "imagination," because of its association with picture-thinking. Imagination may be defined as an ability to pictorialise life without relation to experience. If wish fulfilment is associated with a strong sense of fear of the dangers of reality, imagination may become phantasy. Phantasy is a flight from life, wish fulfilment being directed inwards as an escape from experience of reality, owing to the association of reality with the feeling of fear.

It was stated in Lecture II. that an exaggerated tendency towards fear feeling was characteristic of the nervous temperament. All those who are thus oversensitive to fear stimuli are uncertain in their behaviour reactions. Where fear is strong, the tendency is towards false adaptation and neurosis. The neurotic may also be compared with the child and the primitive savage, because of the same strong tendency towards picture-thinking which exists in all three.

Besides being a prominent characteristic in the savage, the child, and the neurotic, the faculty of imagination is also predominant in those who are assigned the quality of "genius." It has often been observed that genius and a tendency to "neurosis" go together. What is the cause of this association? Both the genius and the neurotic are imaginative, sensitive to external stimuli and emotionally responsive. In both the level of picture-thinking is strongly developed and both are sensitive to primitive and innate sources, of an unconscious racial character. But whereas the neurotic is inclined to dissociate imagination from life—living in terms of phantasy—there is a quality of reality in the genius which, perhaps owing to an increased "energy" factor or some innate quality of technical ability, obtains a mastery over life and achieves self-expression through the work of his artistic creation. The genius uses the material of reality as a check upon his imagination, and to innate creative ability adds an acquired development of technical knowledge. The neurotic has the same source of inspiration, without the same creative ability or attachment to reality.

PICTURE-THINKING.

It may have been considered arbitrary to give picture-thinking a place of importance as the source from which a more abstract type of consciousness has been developed. Let us consider, therefore, some examples of what is derived from this tendency to make pictures.

The first means of communication between one individual and another was probably by gesture, which is a method of making pictures with the hands. A further development of the pictorial method of intercommunication was by the development of writing, and this further extension was made possible by the greater pictorial aptitude of some kind of a

stick. As mastery of materials was gained, drawing and painting were developed as a means of pictorial self-expression and intercommunication. Language, which began by gesture, was developed by means of "picture noises," and the pictorial element in language has always been a method by which meaning has been conveyed. Slang is particularly interesting from this point of view. It is essentially picture-talking, whether it is of the familiar English type such as "letting the cat out of the bag," or the modern American variety of "spilling a bibful" or "the kitten's pants." The picture-making tendency is most freely utilised in poetry, where simile or metaphor convey meanings and emotions which more abstract forms of expression are unable to convey.

> "I will go down to the great white mother,
> Mother and lover of man, the sea.
> I will go down to her, I and none other,
> Kiss her, caress her and mix her with me."
> *Swinburne.*

Other forms of primitive picture-making by means of words are the fairy tale, nursery rhyme, folk-lore, myth, allegory, and parable. The last two only differ from the others in conveying a moral.

There is one characteristic in all forms of picture-making which is very liable to be overlooked. We are inclined to look at the picture as *something in itself* and to miss the fact that its sole function has been to convey the *meaning* quite apart from itself. For instance, a political cartoon of a donkey with a human head at either end, as a picture by itself might be regarded as a zoological monstrosity. It has no meaning without *interpretation* and this applies to all cartoons. Their purpose is to convey a meaning, and before the meaning is appreciated the picture requires interpretation, which depends upon other knowledge of events previously possessed by the interpreter. In other words, it requires association with previous experience. However, much of this "picture-writing" has lost the meaning which it was originally intended to convey.

A folk tale, such as that of Cadmus (Jason) and the dragon's teeth, may be read simply as a story of a man who sowed some dragon's teeth in the ground with a very remarkable and unlikely result. But if the teeth are taken as pictures, which require interpretation before they can be understood, then in meaning they are not teeth at all, and the resultant armed men are no longer so impossible.

Fairy stories and nursery rhymes, passed down from generation to generation from a far-off past, have also lost the meaning which they were originally intended to convey. Let us take, for example, the common slang term of "fiddlesticks." A fiddlestick is a definite object of very limited usefulness which is, as a rule, not used by those who commonly use the expression "fiddlesticks." In the nursery rhyme:

> "There was an old woman who lived in a shoe,
> She had so many children she didn't know what to do"

there seems to be no association between the fact that the old woman lived in a shoe and the fact that she had so many children she did not know what to do. But perhaps another nursery rhyme may throw more light upon the problem.

> "My master's lost his fiddling-stick,
> My dame has lost her shoe."

Here we have an association between the fiddling-stick and a shoe. The fiddling-stick is a picture of something which moves up and down in a rhythmic fashion, so that if we are to interpret, with the material so far available, we find an association between something which moves up and down in rhythmic fashion, something which is like (but is not) a shoe, and the production of a great many children. That this is not an entirely unusual association will be seen from the following, taken from the notes of the patient (Case J) who had an obsessional impulse to count in fours. She wrote the following notes on her feelings as a child about her father's umbrella:—

> "When I was a child I used to have a particular attachment to my father's umbrella. I always told it where we were going and what we were going to do and expected it to be upset or pleased according to my own feelings.
>
> "It had to keep in step with my right foot. If I dropped it I was angry with it, and told it that it was stupid and clumsy and I usually shook it. When I rode on a tram or a bus I put the ferrule of the umbrella inside my shoe to keep it close to me and keep it warm. I liked best to sit on top of a bus in the back seat where I could nurse the umbrella in my arms and point out all the interesting things to it as we passed them. This was not often practicable, for, if my mother found out what I was doing she generally took the umbrella away. Sometimes I was not allowed to carry the umbrella. On these occasions I whispered to it to break or tear itself or trip up my mother. Always when I got home I placed the umbrella in the stand on my father's side and wrapped his overcoat round it, partly to hide and protect it, partly to aggravate my mother, who slapped me every time for hindering her from finding it when she wanted to go out, but I continued to do it for years."

When the patient wrote these notes she had no realisation of the meaning which the picture of the umbrella conveyed to her. To her the umbrella was an umbrella, and in the "picture" of a shoe she saw only a shoe. She did not realise that another picture of the umbrella would have been a fiddlestick and that she wished to be in the position of the old woman in the nursery rhyme.

To whatever extent language may be developed in its ultimate differentiation, it is fundamentally derived from a primitive picture form. Words are the symbols we use to express the meaning which we wish to convey and in themselves they have no value apart from this meaning. It has been well said, "words are the counters of wise men, but the money of fools."

It is not easy to appreciate that language is derived from unconscious sources, but it is a fact. The original development of words in all languages has not been the work of philologists and academicians, but they have grown by a process of unconscious selection because of the meaning which they were able to convey. The example quoted above, of "fiddlesticks," applies to far more than the development of slang. There is a most interesting field of psychological and philological research, as to the *unconscious* values and associations which have determined the use and development of certain words from their original root meanings. For example, in French there are the two similar words —"mer" meaning sea, and "mère" meaning mother. It is not by chance that two such apparently different meanings as "sea" and "mother" should be linked by similar word-forms, because the Sanskrit root of each is "ma" meaning "to create," which is usually the meaning of the sea which so often occurs in dreams.

PICTURE SYMBOLS.

Our consideration of picture-thinking has enabled us to approach the problem of symbolism with all that is necessary to understand the meaning and importance of the everyday use of symbols. A symbol conveys a *meaning* apart from itself, and, as is the case with all primitive and unconscious picture-thinking, it usually also conveys a *feeling*. For instance, the flag and the cross are symbols, simple in themselves, but pregnant with meaning and affective tone. Picture-thinking and symbolism are necessary and valuable to us for their simplicity, economy of form, and as a vehicle for the apt conveyance of emotions.

Symbolism is the material, whether we wish it or no, through which artistic and creative effort must be applied. But symbolism, apart from its undoubted value, is the source of a very subtle and serious danger. The danger is that in the riot of feeling which a symbol may arouse, its meaning may be ignored. The primitive and the child, motivated by an ever-present fear, tend to prefer the concrete to the abstract, the definite to the ill-defined, the known to the unknown. Fear of the unknown, the immaterial, and the vague is the source from which is developed much of the so-called materialistic and rationalistic philosophy. We like our words because we fear their meanings. Like a drowning man who clutches a straw, we hold on to our symbols, lest their form should escape us in those doubts which must assail us when we seek to unveil their true meaning.

To all of us symbols are a danger, but to the neurotic symbols are a disease. The life of the neurotic is full of unknown and unvalued symbolism, of forms and rituals of an obsessional character, the meaning of which has never been differentiated in consciousness. One of the functions of consciousness is to differentiate the symbol from its meaning, the means from the end, and to set free the feelings and motives which have become locked and fixed in a dead materialism of symbolism.

Dreams.

When we appreciate the meaning, importance, and danger of symbolism, and the absolute need for interpretation before the meaning of the symbol is understood, we can approach the subject of dreams.

It has already been stated that the tendency is to confuse the symbol with the meaning and to say that an apple is always an apple. It is not true. In the story of Adam and Eve, the apple was not an apple at all, but a symbol. Dreams are an activity of the "picture-thinking" layer of the mind and as such are meaningless when regarded superficially as things in themselves, but full of meaning when regarded as pictures, put in the story as symbols to convey a latent meaning which can only be discovered by interpretation.

The exact processes accompanying the physiology of sleep still remain uncertain, but as a working hypothesis it may be assumed that it is the cortical layers of the brain—i.e., those of a superficial and differentiated type of consciousness—which are in abeyance during sleep. Whether this is due to a localised cortical anæmia is uncertain, but the evidence tends to show that the depth of sleep corresponds with the depth of cortex which is inactive.

People seem to vary in the extent to which they are aware of dreaming during sleep. Some authorities state that there is always dream activity during sleep, whether the sleeper is aware of it or not. If we regard the dream activity as an activity of the deeper layer of the cortex, it would seem probable that in the deepest kind of sleep the sleeper may be below the depth of the recoverable dream layer altogether, in which case he would be in a condition of dreamless sleep. It is certain that some people are usually aware that they dream, although on waking up they may not be able to recollect its details. Others will say that they never dream, but this probably refers to the fact that they never recollect their dreams. A great majority will say that they dream occasionally, but under psychological treatment it is usually found that patients are more frequently aware of their dreams than in the ordinary course of life.

There is a common attitude towards dreams which attributes them merely to digestive disturbances. It is quite true that digestive disturbances *do* influence dreams and are usually conducive to the nightmare type. However, it is probably wrong to say that digestive disturbances *cause* a dream. A dream is the result of an impact between an internal emotional state and an external stimulus. As a rule the external stimulus has been experienced during the previous day, but from the point of view of dream-consciousness irritation of the vagus nerves may be considered as an adequate nervous stimulus sufficient to activate or modify the dream state. However, it must not be forgotten that there is still the internal emotional tension of the individual to be considered, and this is independent of all external stimuli whether due to indigestion or to the previous day's experience. A dream is an expression of the inward being of the individual—it is part of himself. It differs from consciousness in being independent of conscious inhibition, which is absent owing to the abeyance of the superficial cortical layers. It therefore provides information which may never otherwise enter consciousness as to the inward psychological state of the individual. Finally, the dream is dynamic. It is as much an expression of a motive as conscious behaviour is an expression of a motive. In the same way that we can inquire with regard to conscious behaviour, "What is the motive underlying this?" we can also ask the same question of dream behaviour, but without the difficulty of having to deal with superficial conscious inhibitions and distortions.

Before we proceed to a classification of dreams there are one or two further points which deserve consideration. The material which is used in a dream is described as its "manifest content," and is only to be regarded as the symbolism which conveys the meaning or "latent content." It is usually related to recent experience, and much of the content of a dream may be accounted for in this way. The question is, why the dream should have selected only such material as it does out of such a large potential source of supply derived from immediate experience? There must have been some selective process which chose this part of one experience, ignored the remainder, and linked it up with some other part of some experience which was actually quite out of context with it. This is the dramatic process of the dream which chooses just such elements of experience as it requires for its own completeness.

It sometimes happens that one item in the dream may seem to be derived from many different sources. For example, a person appearing in the dream might have the face of the patient's mother, but in other respects the person of his wife. This process, "condensation" as it is called, enables the dramatisation of the dream to take place with a maximum of economy.

There is one great difficulty in dream interpretation of which all who have tried to understand their own or the dreams of others must be aware. It has already been stated that the activity of the picture layer of the deeper cortex is expressed in picture terms, in the form of symbols which, to be understood, require to be interpreted. Perhaps in a dream I find myself by the side of a river which reminds me of a certain day on a summer holiday. Is the river to be regarded as a symbol, and therefore not as a river, or is it to be regarded as only that particular river of which I am reminded? Perhaps the dreamer is beating somebody with a stick. Is the stick to be regarded as a stick, or as a symbol and therefore not as a stick? It would appear that some details of a dream require interpretation, but others are to be taken at their own face value. The difficulty is a very real one

but not insuperable. All that we have to discover is the *meaning or value to the dreamer of any particular item in the dream.* This may be arrived at in different ways. For instance, of any item in a dream one may ask the patient "What do you feel about it?" "What does it mean to you?" or "What does it remind you of?" In each case one is interpreting the meaning of the picture by finding out its personal value to the patient.

Are there any universal symbols which may be taken as having a definite meaning, apart from any value which the patient may be inclined to give them? There is no doubt that it is extremely dangerous for anybody interested in interpreting dreams to assume the validity of universal symbols. It is quite true that many symbols are found in the dreams of many patients, in many different circumstances, in many parts of the world. If, however, the meaning is what the interpreter has been led to expect by his knowledge of universal symbols, then this meaning may be obtained direct from the patient as what it means to him. It is never safe to assume that a symbol in a dream means what it ought to mean. The most dangerous ground of all in which to employ universal symbolism is that associated with sexual factors. It is too easy and too dangerous to assume that a walking-stick is always a phallic symbol. It is quite possible that it has an entirely different significance to the patient; it may be no more than it seems, an additional means of support.

Are there dreams which have no meaning, no motive, and no value? It is impossible to say, but it is certain that from the point of view of the psychotherapist dreams that have a useful discoverable meaning are definitely limited in number. With infinite patience, great aptitude, and a large measure of luck, it is possible that all dreams might be found to have a meaning; but it is certain that in practice a large proportion of dreams are beyond the ability of the psychotherapist to understand with any degree of satisfaction if he is approaching his task in a critical way.

CLASSIFICATION OF DREAMS.

The following is suggested as a classification of dreams: (1) wish-fulfilment; (*a*) simple, (*b*) desired but feared; (2) anxiety (feared and not desired); (3) teleological; (4) self-critical; (5) repetitive; (6) indefinite.

WISH-FULFILMENT.

(*a*) *Simple.*—This is typical of the child's dream. He wants a bicycle and dreams that he is its proud possessor. It is a dream of simple wish-fulfilment without arousing any complex issues and depends upon the existence of a single wish without opposing conflict. The dreams of hungry explorers isolated without food on an ice-floe would be of this type. They might dream of luscious steaks, with succulent vegetables, served in spacious restaurants.

(*b*) *Desired but feared.*—What more often occurs, however, is that the wish cannot be fulfilled without a certain degree of conflict being aroused. Such are the comparatively common "death-wish" dreams. The subject matter of this dream is usually in terms of dead bodies and coffins, perhaps with added gruesome details, and the feeling tone aroused in association by the patient is that of fear or horror. A wish is being expressed in the dream for the removal of some undesirable person, but it is a wish that obviously cannot be accepted or even visualised in consciousness without disapproval. In point of fact, when one appreciates that the dream is only to be taken as symbolism, the wish is seen to be not so horrible after all. The motive of the death-wish is a "wish to be rid-of." Death is the simple and practical form in which the "wish to be rid-of" is expressed. It will, however, be readily realised that after the "wish to be rid-of" enters consciousness as a death-wish, the patient may be horrified to find himself possessed of the motives of a would-be murderer. Much of the patient's anxiety can therefore be allayed by the interpretation of this type of dream from its simple wish foundations. To accept the idea in consciousness of the wish to murder a person is a reasonable cause for anxiety, but there is nothing to worry about if the patient realises that he is only anxious to get rid of that person because that person happens to be in the way of his wish-fulfilment.

ANXIETY DREAMS (FEARED BUT NOT DESIRED).

This is a common type of dream, of which probably the most familiar example is that of "missing trains." The dreamer is afraid of his inadequacy and feels incompetent to fulfil the task which lies before him. His dreams express his lack of confidence and fear of failure. A medical student, preparing for an examination, may dream that on the way to the examination hall he misses the train, that when he has caught it, it goes to the wrong destination, that it finally arrives half an hour late, that he has then lost his pen and when the closing hour has struck he is still only half-way through the first question. The feeling tone throughout is one of anxiety owing to a feeling of inadequacy.

TELEOLOGICAL DREAMS.

Dreams, besides referring to the past and present, frequently contain suggestions as to the solution of a patient's difficulties. A woman of 47, wearing horn-rimmed spectacles, a severe expression, and a masculine type of dress, was the headmistress of a large girl's school. She had entered and passed with honours every examination within her power, and judged from one standpoint her life could be measured as successful. As a child her parents had told her that they were bitterly disappointed that she was not a boy and her whole life had been directed towards making up for this unfortunate defect on her part. Up to a point she had succeeded and she had been able to contribute, from very small beginnings, to her parents' comfort in their old age. But she was subject to extreme fits of depression and she was afraid of going out for walks by herself in lonely places, or if it was dark, in case she should be attacked by a man. It was for this depression and anxiety that she came for treatment, during the course of which she had the following dream:

> "I was on the top of a high hill with some other people and I was told that we had to go down and cross the river that lay between the base of the hill and some rugged barren ground on the other side. I did not wish to go and wanted to stay on the hill. I told the others if they went there would be an awful disaster, but in spite of my warning they went down the hill and commenced to cross the river. They had only got half-way across when suddenly there was a terrible storm with rain and wind and they seemed to be washed away. Then I found myself going down the hill and knew that I also had to cross the river, but somehow I did not feel afraid because in my hand I held a talisman. It was circular, like a little box, and I seemed to touch it with my forefinger and then touch my face. With this talisman I was able to cross the river without danger."

She found some little difficulty in evaluating her talisman, until she was asked to make the gesture that she had to make in the dream. There was no doubt about it, and she discovered its meaning for herself. The talisman was a powder-box and puff,

symbols of femininity which she had always affected to despise.

SELF-CRITICAL DREAMS.

It is a great mistake to regard the unconscious or its dream activity as being entirely either stupid or evil. This part of the mind is possessed of creative power, a sense of humour, and a vivid artistic and dramatic sense. The critical capacity of the dream consciousness is occasionally devastating and may occur with startling vividness in otherwise uncritical people. For example, a patient entered a consulting room one day, obviously displeased with life. He said he had nothing to talk about and then he admitted that he had had a dream, but said that all dreams were nonsense and that this dream was particularly useless from the point of view of analysis. In other words, his defensive reaction was very strong and was an indication that the dream was likely to be a very fruitful one when interpreted. It was as follows:

"I was in the corner of a field alongside which was a muddy lane. In front of me was a donkey harnessed in a broken-down little cart, but it had funny legs. They were all twisted like the tendrils of a vine and it looked very unsteady."

The donkey may be taken as a universal symbol in this dream and no experience of dream interpretation is required to understand the self-criticism which it displayed. The patient's association with the donkeys legs was that they were just like the tendrils of a vine which, he explained, could not stand up by itself but required support from something stronger.

REPETITIVE DREAMS.

The repetitive dream is due to a tendency to continue into the dream state the experiences of the previous day. If one has been driving in a car all day, the motion of the car may occupy a prominent part in the dream. Another example is when the mind has been occupied all day with the addition of figures or any work requiring intense application, and continues in the same way in the dream.

INDEFINITE DREAMS.

This last group has been left to contain those dreams which cannot be fitted into the previous categories. It is at least useful as an indication that there are many dreams which we do not understand. Perhaps they are just dream imagination, play without purpose, without meaning in themselves.

Nothing has been said in the foregoing categories with regard to prophetic dreams. Prophesy has always been regarded historically as the main function of the dream as, for instance, in the case of Joseph and the fat and lean kine. It is interesting in this connexion to realise that the measurement of time is a convenient convention on the part of consciousness, which has no existence in the dream state, or in fact at all apart from our consciousness of it. This has been said by some to explain the prophetic nature of dreams, but if there is no time in the unconscious there is at least a difference of before and after, as much as in consciousness. The difference of before and behind, future and past, is independent of any conscious convenience obtained from the time measure. It is probably true that telepathy occurs in dreams, but a claim for anything so remarkable as prophesy should be regarded with a good deal of hesitation. What is certainly the case is that the unconscious, as was said of Manchester, sometimes feels to-day what conscious London is going to think to-morrow. It is therefore obvious that it may be possible to deduce from a dream the course of a patient's subsequent behaviour.

Symptoms.

To complete our understanding of the method in the madness of unconscious processes, it is useful at this point to link up dream formation with symptom formation. It has been said that the dream is the activity of the deeper picture-forming layers of the brain associated with instinctive wishes and fundamental emotional states. The same applies to symptoms. They are derived from the same source, motivated from the same wishes, and cast in the same pictorial and unreasoned mould. The following is an example of such a phobia.

CASE K.—A man, unmarried, aged 37, had a phobia of policemen and begged to be allowed to have a personal interview with the local police inspector in order to find out exactly what it was of which he was being accused. He never passed a policeman without feeling that he was going to be arrested, but he was completely unaware of having ever committed a crime. It was easy to recognise that the policeman was a symbol representing law and punishment, from which it was a short step to deduce the fact that the patient had, at some time, done something of which he felt ashamed. This was discovered by analysis. When he was 3 years old he had been induced to commit an improper practice with an elderly female relative, and had been discovered doing so by his father, who had severely and quite unjustly punished him. From that time he had always felt terrified of his father's presence. The episode had been long forgotten, but the sense of guilt and the fear of punishment had been transferred to the symbol of policemen in general. The situation had been pictorialised and the meaning had been lost in the neurotic's adherence to the form of unconsciously chosen symbolism.

The obsessional case (J) mentioned in Lecture II., was another example of a picture-forming symptom in which the patient gratified the two conflicting wishes in a single obsessional compromise. On a more complex level of behaviour the following case may be cited.

CASE L.—A man, married, aged 39, was under treatment for sexual impotence. In a dream which occurred early in the course of his analysis, he had dreamt that he was standing in the Liberal Club waiting for the entrance of a world-famous politician. He and a few others had just started to sing "For he's a jolly good fellow," when a procession of athletes in shorts and vests filed smartly into the hall. These changed from male to female figures in a state of nudity. Interpretation of this dream showed a double tendency in the patient's life to identify himself on the one hand with the successful extraversion of the politician and the athletic prowess of the male athletes, but on the other hand an identification at a deeper level with the feminine sex. The further his analysis proceeded the more examples were adduced of this feminine identification. He wished to be a woman. His analysis had proceeded for a long time when, for psychological purposes, he was asked to notice the characteristics of the way in which he shook hands. At first he said this was perfectly normal, but then he realised that he shook hands high up, about the level of his neck, holding the tips of the fingers. His first association was that some people had a ridiculous method of an exaggeratedly hearty and dramatic hand-shake. His second association was "I feel if I were to shake hands in the ordinary way, down there, there would be a danger of touching one another in the sexual parts." Then he said, "This is what comes into my mind. If I shake hands in the (h)air it is nearer my head and therefore away from my sexual feelings. Perhaps this may be an escape." At this stage, it was pointed out to him that although his grammar was usually perfect he had aspirated "air" making it into "hair." He was asked to say what came into his mind with regard to "hair." He said: "I will tell you what comes into my mind, but surely it cannot have anything to do with it. I remember when I was about 14, being told by a rather nasty-minded young friend of mine of how he had sat with a friend of his on the sea front at night with a girl. They had shaken hands with each other inside her knickers." In such a brief space of time (about ten minutes in all), it had been possible to arrive at the cause of the manner of hand-shake. Again he was identified with the girl of this episode, and by his first association he wished to be touched on the "hair" (sexual), but this wish had been suppressed. The elevated hand-shake was a defence, of course, against the wish to be touched in the region of the pubic hair. As he had said, it was "nearer the head," but the original wish

for female identification was fulfilled through the fact, which he readily recognised was quite obvious, that his type of hand-shake was a distinctly feminine one.

Illness, as a whole, needs also to be evaluated from the point of view of its symbolical significance. A patient is not ill for the sake of illness, but for the sake of the value or meaning of illness. The life of the neurotic with its phobias, obsessions, and characteristic behaviour is meaningless when viewed superficially, but when it is interpreted and personally evaluated, it is as full of significance as his dream activities. Behaviour characterised as "simply insane" and therefore judged as meaningless is, in fact, full of meaning if it is regarded as symbolical and purposive. It is not for nothing that the insane patient regards himself as a stone, or Napoleon, or pleads that he is the object of mysterious, external influences. *Insanity, although a mental disorder, is arrived at by an inexorable, ordered and understandable, although unconscious, process.*

Self-knowledge and its Limitations.

The interpretative method can do much to resolve the patient's anxiety simply by exposing the motive and meaning of his apparently disordered and uncontrollable impulses. In particular, a patient with an obsessional psychology always wishes to have everything ordered and simplified. To be possessed of a dissociated impulse, the origin, motive, and meaning of which he cannot understand, causes him acute discomfort and anxiety. An understanding of what is the matter and why it is the matter goes a long way towards allaying both his anxiety and his obsession. This applies also to the anxiety states, where the source of anxiety is unconscious. To know what we fear is bad enough, but not to know what we fear is infinitely worse. Fear that is finite can be fought and faced, but fear that is infinite and indefinite can never be overcome.

Treatment can be carried out by illustration, explanation, and interpretation, but to gain self-knowledge is not always to gain cure. For example, in the case of the man mentioned above who wished to be a woman, it was not sufficient for his cure to know that this was what he wished. His wish to be a woman must cease, or at any rate be modified to such an extent as to be compatible with the ordinary standards of manhood.

The difficult cases to cure are those who do not wish to give up their unconscious wishes when they become conscious. For example, a patient of 27 had spent his whole life contentedly attached to his mother's apron-strings, resorting to invalidism and self-pity when things got difficult. During the course of treatment he realised that what he wanted was a perfect opinion of himself and complete possessive intimacy with his mother, but even when he was conscious of the motive of his illness it still remained as what he wanted. There are many cases which present this difficulty, but a further step may be achieved by helping the patient to understand that even his mother is not the end in herself, but only a means to an end. She is, in fact, only a symbol of his wish for priority, security, and power. To the neurotic the end is always lost sight of in devotion to the means, because the means has become the symbol of the end. It was not really the possession of his mother that he wanted, but that he should be valued, that he should be safe, and that he should feel the strength of his power. These are not essentially neurotic goals. *It is the means by which they are sought, and with which they are confused, that are the characteristics of neurotic behaviour.* It should be possible for such a patient to see that these goals can have a real value and a possibility of real achievement, without necessarily expecting too much either of himself or of life.

SPECIAL ARTICLES

PUBLIC HEALTH IN LOCAL LEGISLATION.

OUR annual survey of recent Local Acts reveals the usual efforts of individual local authorities to improve upon the public health standards applicable to the country as a whole. Several novel clauses have been passed into law, and these will doubtless form precedents to be followed. The Report of the Local Legislation Committee, issued in the past autumn, draws attention in an appendix to various novelties. Unfortunately, the appendix is incomplete; it does not contain references to Scottish local legislation, and it omits such interesting innovations as the radium clause in the Kingston upon Hull Act. Moreover, though sufficient time elapsed between the beginning of August (when the session ended) and the publication of the report to bring the references up to date, the appendix inconveniently makes its references speak to the clauses as numbered in the Bill stage instead of the sections as finally numbered when the Bill became law.

One novel provision, for which Edinburgh seems to have furnished a precedent, concerns the nuisance of noise. A noise nuisance is deemed to exist where any person makes or causes to be made any excessive, unreasonable, or unnecessary noise, and where such noise is (*a*) injurious or dangerous to health, or (*b*) capable of being prevented or mitigated when regard is had to all the circumstances of the case. Newport, Bootle, and Stockton-on-Tees adopted the precedent but with a saving for trading interests, railways, &c., which may diminish its value. The local authorities concerned are empowered to deal with the noise nuisance as they deal with any other nuisance under the general public health law. At Hendon and Rotherham the sabbath calm is not to be broken by the noise of crying or bell-ringing to sell or advertise any article or commodity. This extends a provision against crying newspapers on Sunday which was already familiar—for instance in the Bognor and Chester Acts last year. Another new power concerns the supervision of private schools which a recent London prosecution suggested was inadequate. At Hull, by-laws may secure the proper heating, lighting, and ventilation of premises used as schools not maintained by the corporation, adequate washing and closet accommodation for the children, and facilities for drying their clothes. Interest in the young has prompted Liverpool to take power to regulate the hours of employment, meal intervals, holidays, and general welfare of young persons employed in errand work outside the Factory Acts. Welfare provisions at Cardiff extend certain general provisions (Section 72 of the Public Health Act, 1925) against food contamination so as to apply to rooms

within the Factory and Workshop Act and to require adequate water-supply and, if the room is used for preparing food for sale, toilet soap and towels for employees. The supervision of food and food-supply has, of course, been a common feature of Local Acts. Noteworthy enactments in this respect in the past session include Section 59 of the Rotherham Act, forbiding the sale of meat within the borough unless the butcher, merchant, or dealer in meat is registered; no premises are to be used for this purpose unless also registered. Under Section 92 of the Bristol (No. 2) Act punishment awaits the seller of unsound food unless he proves that, at the time of the sale, he and his servants were ignorant of the unsoundness. The Cardiff Act (Section 108) enables the city to decide that nobody but a shopkeeper shall offer meat or "meat food product" for sale from a vehicle, basket, or barrow unless his storage accommodation has been approved and certified. Such accommodation will be registered and subjected to inspection by medical officer of health and sanitary inspector. There is no need to mention familiar clauses as to food storage in dwelling-houses, but Cardiff has now a direct provision that all future dwelling-houses must have a properly ventilated and fly-proof larder. Other usual food clauses are the power to take samples for analysis, the restriction on infected or tuberculous persons handling food, by-laws as to inspection of meat and transport of food, notification of slaughter of animals unfit for food, and prohibition of bringing inedible fats into premises where food is prepared. The accustomed ice-cream and potted meat clauses are frequent; the power to refuse or revoke registration of ice-cream manufacturers and sellers at Darlington, Bootle, and Southport is worth noting. Food poisoning is made notifiable by medical practitioners in 11 localities. Hull continues the national kitchen system, and the Morecombe and Heysham Order authorises municipal contribution towards tanks for cleansing or sterilising mussels.

As regards the treatment and prevention of disease, an interesting Hull provision allows the corporation to subscribe to any trustees or other body holding or supplying radium subject to terms and conditions as to the supply and use of the radium; the expenditure is not to exceed a penny rate. There is additional power at Hull to enable municipal supply to medical practitioners (with or without charge) of medicines, appliances, and requisites for surgical treatment; it seems that the practitioner need not be registered. Infectious diseases provisions as to removal of dead bodies, cleansing filthy premises and articles, compulsory information to the medical officer, furnishing of laundryman's name, notifying the head teacher of a school-child's infection, closing Sunday-schools and entertainments during an epidemic, and so on appear frequently as in former years. There are precautions against plumbism in water-supply, enactments relating to Rochdale, Stockport and Kingsbridge and Salcombe. Veterinary provisions to prevent insanitary conditions in stables go further in several places, and include a power to obtain a demolition order for stables and cowsheds where infectious or parasitic disease has appeared and the premises cannot be efficiently disinfected. The pigeon nuisance is dealt with at Hull and at Croydon.

Housing and drainage matters naturally receive special attention. Cardiff requires that new dwelling-houses must have not only the fly-proof larder already mentioned but also a secondary means of access to a street for removal of house refuse. The Bournemouth Act allows the corporation to provide on the occupier's request a galvanised iron dust-bin on agreed terms. Newport has a similar power with different arrangements for recovering the reasonable cost from the owner or occupier. Birkenhead requires sufficient room to be left near future public buildings, public garages, and warehouses, not only for the arrival of fire engines but also for the storage of dust-bins To return to Cardiff, boats used for human habitation have there been linked up with tents, vans, or sheds. Such boats are not to be placed on land abutting on a street in advance of the building line, nor in a square, court, alley, or passage to which the public has access and which is required to be left free of obstructions; nor must such boats be placed or kept on land or water adjoining the foreshore without municipal approval, though canal-boats and vessels used for navigation are naturally excepted. At Birmingham, Liverpool, Birkenhead, and Wednesbury a working-class dwelling will be deemed not in all respects fit for human habitation if its owner fails to keep it sufficiently repaired and painted and the interior surface of its walls sufficiently papered or distempered with washable distemper of suitable quality so as to prevent dilapidation and secure reasonable amenities for the occupiers. As for drainage, the rural district councils of Epsom and Guildford, using their new powers under Section 55 of the Local Government Act, 1929, of promoting Bills, have obtained almost identical Acts which inter alia penalise anyone who without consent commences to erect a dwelling-house within 50 feet of a cess pool on land of which he is owner or lessee. The Birkenhead Act (Section 64) forbids the erection of a new building over a drain without consent. Cardiff enacts that anyone who seeks not merely to "reconstruct or alter" a drain (as in Section 39 of the general Public Health Act of 1925) but also to repair a drain must, except in emergency, give 24 hours notice in writing. Epsom and Guildford have taken power to prohibit erection of buildings meant for dwelling houses on land liable to flooding or unsuitable by reason of its subsoil; the restrictive order is subject to approval by the Minister of Health who may hold a local inquiry. Precautions against floods (through the prohibition or regulation of building on low-lying land) also appear in Section 5 and Part XII. of the gigantic consolidation of the London Building Acts on which the London County Council is to be congratulated. Mere amenities are perhaps not strictly a matter of public health, but it is clear that the restriction of advertisements is being tightened in many places, while at Epsom and Guildford trees are to be registered for preservation and protection almost as if they were ancient monuments.

This cursory and disconnected survey of the local legislation of the session 1929–30 gives no complete picture of the corporate activities of our local authorities in a session of exceptional activity in this respect. Ample material for study will be found in the official index to the Local Acts of the session published by H.M. Stationery Office (price 2*s.* 6*d.*) wherein the alphabetical entries range from "Aerodromes, &c., provision of" (at Portsmouth and Liverpool) to "Windows, size and height of" at Aberdeen. The report of the Local Legislation Committee recommends that many clauses which have become common in Local Acts in the past five sessions should now be caught up in a general adoptive Public Health Bill as was done in 1925, and that such a Bill should be introduced without delay. It would certainly be a convenience if the Bill could be passed into law in time for its incorporation in the restatement of public health enactments for which, as we mentioned recently, Lord Chelmsford's committee is to prepare the ground.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

THE SUPPLY OF NURSES.

FACTS about the distribution and availability of graduate nurses in this country have recently been gathered by the Committee on the Grading of Nursing Schools. They find that 54 per cent. of 24,389 graduate nurses who are still active in the profession are engaged in private duty nursing. This sample of nurses is taken from 10 States, and is believed to be representative of the more than 210,000 graduate nurses working in this country. Some 4000 doctors agreed that there is no shortage of nurses. However, the proportion of nurses to population is much less in the rural communities than in the cities. This is no doubt largely due to the greater wealth of city dwellers. The committee state that there is "a real need for the services of graduate nurses with high professional standards of nursing care" in these rural communities.

Since physicians stressed the need for good background and the ability to observe and report symptoms with accuracy, investigation was made into the background and education of American nurses. More than half (56 per cent.) have fathers born in the United States. Of the remainder, far the largest group are daughters of British-born fathers. Less than half of the nurses had completed the four years of high school before they entered the training school. About one-quarter had not passed beyond the first year of high school. Ten per cent. had one year or more of college education. Training schools are increasingly demanding a high school diploma at the present time as an entrance requirement. Even in times of prosperity many nurses are unable to find employment. The present depression finds a serious condition of unemployment.

MEDICAL HISTORY AT A UNIVERSITY.

A short time ago it was decided to add a department for the history of medicine to the Johns Hopkins University in Baltimore. Dr. William H. Welch, who held the chair of pathology in the University for many years with great distinction, was appointed head of this new department with the title of Professor of the History of Medicine, and a palatial library was built in his honour opposite the Johns Hopkins Hospital. The building consists of a large reading room and a fine conference hall in which hangs Sargent's well-known picture of the "Four Doctors." In the upper floor are book stacks, two small lecture rooms, librarian's room, and accommodation for research scholars, while among the book stacks themselves are alcoves for readers. Those engaged in research at the present time are Dr. John Rathbone Oliver and Dr. S. D'Irsay. The library is already well filled with journals and reference books for the history of medicine, and has been enriched by noble gifts from the libraries of Dr. Howard Kelly and other generous donors. It has been fortunate in obtaining the services as librarian of Colonel Fielding H. Garrison, who was for many years in charge of the Surgeon-General's Library at Washington. To inaugurate the library Sir D'Arcy Power, hon. librarian of the Royal College of Surgeons of England, was asked to visit the University in the months of November and December last. During his visit he gave formal lectures on the Principles of Medical Biography, Medical Bibliography, Medical Iconography, and on the growth of an English medical institution, taking the history of St. Bartholomew's Hospital as an example. He also gave a series of informal talks to small groups of students who were interesting themselves in the history of medicine. It will thus be seen that the study of history is becoming a well-recognised and well-endowed branch of medicine in the United States. Lectures are being given at Baltimore by Colonel Garrison and Dr. Oliver throughout the winter session and are attended in each case by classes of 30 to 40 students. The lectures are made practical by teaching students not only the history of the subject but the method of writing critical reviews of current works and biographies of medical personalities of all countries. Each student is allowed to select the subject in which he is specially interested and his essay is expected to show the *Quellen* with a bibliography. Dr. MacCallum, the professor of pathology, has already introduced a similar system in his department.

CRIMINALS AND MEDICAL SECRECY.

In a country where both private and police use of revolvers is still not uncommon, doctors are often confronted with gunshot wounds of questionable origin. Is it the doctors duty discreetly to cloak his curiosity and to take no notice of the nature of the injury apart from his professional care? The physicians of Essex County, New Jersey, believe not. They have voted to report to the police, immediately after treatment, all wounds which they suspect to be the result of criminal acts. Their resolution states that they regard this as a public duty on all fours with the reporting of contagious disease. The Department of Public Safety has agreed to regard such reports as confidential and to use them in evidence only with the consent of the doctor who makes the report.

MEDICAL ECONOMICS IN WEST VIRGINIA.

Some interesting figures have been produced by the West Virginia Medical Association, based on the results of a questionaire study of the incomes of its members. The highest income was $28,000 per annum. Two doctors reported this figure: one a surgeon and the other a general practitioner. The smallest income was $420—that of a physician in a rural community who has been in active practice for 24 years. The "average" West Virginia doctor collects 79 per cent. of his accounts. The average net income of a county general practitioner is $4396, and of the city general practitioner, $6528. The physician working under "contract" earns less—$4166. It was estimated that it requires at least three years for the young doctor to establish himself in the community. The 1500 doctors in the State collect ten million dollars yearly, of which eight million represent net income. Their charity work is valued at one and a half million dollars.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

THE HEALTH OF BELFAST.

THE Belfast annual report for 1929, which has lately been issued, shows a birth-rate of 21·4 per 1000 (22·5 in 1928) and a death-rate of 15·6 (14·0 in 1928). The increase of deaths is attributed to a severe influenza epidemic during the first quarter of the year, when the death-rate was 26·8. The mortality from cancer was 1 per 1000, and from pulmonary tuberculosis 1·16. Details are given of the end-results of pregnancy in 1869 tuberculous mothers. Ninety per cent. of them were delivered of

a living child at full term, 2 per cent. of a dead-born child at full term, and 8 per cent. miscarried. Of 696 children born of 291 tuberculous mothers, 512 are healthy, 47 delicate, 11 tuberculous, and 126 are dead.

A study was made of the social condition of those who live in overcrowded conditions, and it was found that: (*a*) the overwhelming majority of people living in overcrowded houses or rooms were *employed*; (*b*) the rents were very low; (*c*) the wages were often —but not by any means always—poor. The deduction to be drawn from the economic point of view is that if the corporation builds houses for "the overcrowded" money will be dropped, for this type of worker will not go into more roomy houses except at a rent economically impossible.

A large part of the report deals with infant mortality, the rate for Belfast being 112 in 1929. More antenatal centres are required. Of 8987 expectant mothers, 1822 received attention at three hospital antenatal centres. It is not possible to state how many of the remainder received antenatal care from their private medical attendants, but the medical superintendent officer of health states that he is advised that probably 70 per cent. are not receiving antenatal examination and supervision. This serious state of affairs can only be met by educating people up to the great need there is for such attention. Future mothers as well as existing mothers should be taught mothercraft; the mother's is a skilled trade. Additional health visitors for maternity and child welfare work are required, and dinners should be provided for poor expectant mothers at various centres.

More than four-fifths of the daily supply of milk to the city is produced in farms outside the city, and over these dairy farms the officers of the city have no supervising powers. Of the milk sold in Belfast 4·1 per cent. of 875 samples were proved to be infected with tubercle bacilli. About 30 per cent. of the dairy cattle in Northern Ireland react to the tuberculin test. By adopting the legislation in force in England a more satisfactory method of dealing with milk-supplies would be found, and it is sincerely hoped that the Government of Northern Ireland will adopt or improve upon the Milk and Dairies Consolidation Act, 1915.

The annual report of the Registrar-General for Northern Ireland for 1929 shows a birth-rate of 20·4 per 1000 of the estimated population and a death-rate of 15·9. The death-rate from tuberculosis is still steadily declining, and is the lowest yet recorded; a slight increase in deaths from cancer is reported. Of the 25,410 children born, 2174 died under 1 year of age.

VITAL STATISTICS OF THE FREE STATE.

The annual report of the Registrar-General of the Irish Free State for 1929 estimates that the population of the State in the middle of the year was 2,946,000. The figure given by the census of 1926 was 2,972,802. There is an increase in the number of deaths as compared with 1928, and a decrease in the numbers of births, of marriages, and of emigrants. The deaths represented a rate of 14·59 per 1000 of the estimated population, the total number of deaths being 42,991. Of the causes of death heart disease is placed highest with 5616; tuberculosis next with 3875; followed by cancer with 3116; and influenza 1659. There has been an increase in the number of deaths by violence from 883 to 971; this increase is mainly due to two distinct causes—the increase of deaths from motor accidents, and an increased number of suicides. The total number of deaths from all forms of vehicular transport increased from 150 to 200, the number of suicides from 98 to 111. Up till recently suicide was uncommon in Ireland, but it appears to be taking a place among the considerable causes of death. The mortality from tuberculosis continued to show a gratifying decline. In 1919 the number of deaths from tuberculosis was 5839, and in 1929 was 3875, almost every intervening year showing a fall. The deaths from cancer are 74 fewer than in 1928. The infant mortality was 70 per 1000 births. The birth-rate shows a decline when compared either with the rate in 1928 or with the average in the ten years 1919–28. In the period 1911–15 the birth-rate was 24·9 per 1000 of the population; in 1924–28 it was 20·57; in 1929 it was 19·78. Illegitimate births constituted 3·2 per cent. of the total. The mortality among illegitimate children was appallingly high; no less than 29·4 per cent. died within the first year of life—a mortality more than four times the general infant mortality. The net emigration for the year —18,145—was the lowest on record, the average for the period 1911–26 being 26,946. Nevertheless, it was more than enough to counterbalance the natural increase of population, or excess of births over deaths.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

A DISCIPLE OF ZEILEIS.

ABOUT a year ago the Zeileis affair apparently ended with the acquittal of Prof. Lazarus of Berlin, who published defamatory articles stating that the Zeileis method of treatment is devoid of scientific foundation, that his diagnostic rod is an absurdity, and that the whole business does nothing but mislead the suffering public and prevent them getting regular medical treatment which might cure their ailments. Zeileis sued Lazarus before the Vienna Court, but the decision went against him and he had to pay costs. But this verdict by no means put a stop to the mass migration to Gallspach, the nest of the "wonder doctor." It seemed that the number of his patients even increased, if we may judge by the fact that early last summer the Zeileis Institute sent out printed circulars to all inquirers telling them that all accommodation in Gallspach and the neighbouring towns and villages was booked until October. In fact, the Zeileis business enjoyed such a boom that the old "master" found the time ripe to drain off his vast clientele and establish branch offices in adjacent countries, where he appointed regularly qualified doctors who took a course of his method. The latest institute has been opened in Budapest by Dr. Paul Tóth, a physician and also a Member of Parliament. His enterprise has caused consternation in medical circles, and the board of the Medical Association has informed him that it does not hold it compatible with the vocation of a conscientious physician to apply the so-called Zeileis method. Dr. Tóth, replying in a daily newspaper, says his conscience is clear. He has spent a long time in the Gallspach Institute, and the surprising results seen there have made him a zealous adherent. Thousands and thousands, he says, owe their health, their life to the method, and in his opinion the help and cure of sufferers is what really matters and not the rationale of the treatment according to accepted scientific tenets. The Medical Association, which has

no disciplinary right over its members except exclusion, will deal with the case at a special meeting.

A TREATMENT FOR LATE SYPHILIS.

At a recent meeting of the Budapest Royal Medical Society Dr. Ödön Rajka read a paper on the effect of light treatment and autohæmotherapy on cases of late syphilis which had already been subjected to "chemo-specific" treatment, but had persistently positive Wassermann reactions. His method, he said, was to give a course of 30 irradiations and 20 injections of blood taken from the patient's own vein half an hour after irradiation begins. The positive Wassermann reactions became negative in 57 per cent. of the latent or symptomless cases, and in 28 per cent. of those in which there were signs of damage to the nervous system. The reaction has so far remained negative for periods of 2–36 months, becoming positive again in about a third of the cases. The subjective symptoms improved in every case (41) of syphilis of the nerve and blood system. The tests were begun two years ago and remissions have varied from 1 to 19 months in length. There has been relapse in nine cases only, and of these four improved on a second course of treatment. The patients all felt better in general health, not only during but also after treatment. They slept and ate better, gained in weight, and became more vigorous. It is probable, Dr. Rajka says, that occasional courses of treatment will stabilise this improved condition.

AUSTRALASIA.

(FROM OUR OWN CORRESPONDENT.)

A REPORT ON HOSPITALS.

PERHAPS the most interesting part of the recent report of the Royal Commission on Hospitals in Queensland is the section on the finance of public hospitals. The Commission recommends the creation of a hospital fund by the collection of a special hospital tax of 1*d.* in the £1 on wages, salaries, and income, with exemption for people with not more than £1 per week. It is proposed that 80 per cent. of any deficiency between the estimated expenditure and estimated income of hospital boards should be paid from this fund, while the remaining 20 per cent. is found by local municipal or shire authorities. It is estimated that such a tax on the population of Victoria (900,000) would bring in about £260,000 a year. In 1928–29 the total annual expenditure of both district and voluntary hospitals in Queensland was £668,596, while their receipts amounted to £258,632, leaving a deficit of £409,964 to be provided from taxation and other sources.

The number of public hospitals in the State is 118, with 4229 beds. Under the Hospitals Acts of 1874 to 1891 the 74 voluntary hospitals receive a Government subsidy of £2 for every £1 obtained from voluntary contributions. (This rate has recently been reduced to £1 15*s.* to £1.) The 44 "districted" hospitals are governed by the Hospital Acts of 1923 to 1929 and include most of the larger institutions. Sixty per cent. of their deficiency between estimated expenditure and estimated receipts is made up by Government grant and 40 per cent. by the local authorities who levy a special hospital tax on the unimproved capital value of the land in their area. This hospital tax the Commission regards as inequitable. The effect of direct taxation in drying up voluntary subscriptions was carefully considered but, while recommending with reluctance any interference with philanthropy, the Commission thinks that the present injustice should not be allowed to continue, and points out that in any case benevolence, as far as hospitals are concerned, is rapidly dwindling. The necessity for stability of hospital finance is all-important.

Friendly Societies.—It was realised that the friendly societies members, by contracting for domiciliary medical service, relieve to a large extent the pressure on the public hospitals. It was also realised that, if a wage tax were imposed, members of friendly societies would have to bear a double burden, and to overcome this the Commission recommends provisionally that members of these societies be provided with intermediate ward accommodation at the rate of 9*s.* per day which is the maximum charge for public wards. They would have the right of attendance by their own doctor in the hospital.

Central Hospital Commission.—The Commission has come to the conclusion that hospitals throughout the State could be most effectively managed by a central hospital commission consisting of three members, including a permanent full-time chairman. Among other duties it would make a hospital survey of the State, coördinate the hospital system, standardise hospital expenditure, and make more effective the combined activities of the health department and the public hospitals.

Intermediate and Private Hospital Accommodation.—Although in agreement with the establishment of intermediate wards in public hospitals wherever the conditions are favourable, the Commission thinks that hospital authorities should concentrate on the efficiency and adequacy of their public ward accommodation before contemplating the introduction of intermediate wards. To such wards patients would be admitted on payment of the full charge for maintenance and nursing attendance. The wards should be under the control of the medical superintendent; but the patients would have the right to choose their own medical attendant and make their own arrangements about his fees.

Contributory Schemes.—A source of income which has been of great value to hospital boards throughout the State has been the group contributory schemes, whereby for 6*d.* or 1*s.* per week the contributor and his dependants are provided with hospital accommodation when required. The Commission recommends that such schemes should be encouraged. In order to prevent abuse of the scheme, it is suggested that the income limit for single men or women should be £260 per annum and for a married man £340 per annum. The main difficulty with these schemes from the point of view of the medical man is that while the hospital service is thus contracted for, no definite statement is usually made about medical attendance, and most contributors are under the impression that the weekly payment entitles them to free medical attendance in hospital as well. Such a misconception has been the cause of a certain amount of unpleasantness, but with a strict control of the income limit and a clear statement to the contributor as regards medical attendance, the extension of the group system should be satisfactory.

Medical Representation.—It is proposed that a doctor, disassociated from the public service, and nominated by the medical profession in the area,

should be appointed to the boards of hospitals in Queensland of more than 100 beds.

Infectious Diseases.—At present the whole financial burden of the treatment of infectious diseases is placed upon local municipal or shire authority. It is considered that the outlook has been much altered in late years by the appreciation of the influence of "carriers" on the spread of infectious diseases. In years gone by, when these arrangements were made, it was held that the chief causes of the spread of infectious diseases were faulty sanitation and cleansing. The Commission now recommends that infectious diseases should be a charge on hospital boards. Local authorities will be subject to their proportion of the local hospital boards deficit, and this, it is thought, should be a sufficient monetary liability to guarantee the area being kept clean.

Nursing.—In the interests of patients and to facilitate the training of nurses, it is proposed that the hours of duty of the nursing staff should be increased from 44 hours per week to 48 hours per week, exclusive of meal hours.

Patients' Visitors.—As an unobjectionable method of raising money, the Commission suggests that each visitor to the patients in the wards, in excess of two, should be required to contribute 6*d*. On admission to the hospital, the patient is given two free passes which he can give to his relatives or friends. Any visitors beyond this number are charged. This system has been in use in the Victorian public hospitals for many years. The Melbourne hospital (590 beds, including the convalescent hospital) derives a yearly revenue of over £4500 from this source.

MEDICINE AND THE LAW.

Doctor and Barrister: No Fusion.

THE annual statement of the Bar Council contains, as usual, a summary of the rulings given during the past year on questions of professional etiquette affecting barristers. A member of the medical profession, it seems, asked the opinion of the Bar Council on the following question. If called to the Bar, would he be allowed to practise as a barrister while continuing his existing practice in the medical profession? The Council in reply referred to the principle that a practising barrister should not, as a general rule, carry on any other profession or business; they grimly added that, whatever might be the exceptions to this general rule, the case under consideration would not be an exception to it.

The known disinclination of the Bar to allow its members to practise any other vocation is illustrated by another ruling in the annual statement. A barrister who is also a rating surveyor and valuer sent out circulars on letter paper on which he was described as "Rating Surveyor and Valuer, Barrister-at-law," inviting persons to employ him on appeals against their assessments. This was a threefold breach of professional etiquette. First, a practising barrister should not also practise as a surveyor and valuer; secondly, he must not print the words "barrister-at-law" on his note-paper; and, thirdly, he must not ask for work. The Bar Council remarks that, as letters addressed to the offender failed to obtain an answer, the matter was reported to the Bench of his Inn. This incident shows how easily the traditions of the Bar can be embarrassed by association with some other calling. The medical and legal professional standards are, of course, similar as respects advertising and touting, but there are a few practical differences which might cause awkwardness in the event of an attempted fusion of the two vocations. The Bar does not allow its practising members to state after their names on the doors of their chambers in the Inns of the Court even the rather scanty references to professional qualifications which are permitted on the doctor's brass plate. The Bar does not allow partnerships. The barrister is immune from actions of professional negligence. The double qualification (in both medicine and law) is naturally of great value to a man practising either medicine or law. Indeed, Parliament may some day enact that all coroners should possess this duplicate training. But the Bar will not allow the practising medical practitioner to practise also as a barrister, though it is not clear that the General Medical Council would object in the converse case.

Proof of Relationship.

The objection to the admission of hearsay evidence is a well-known feature of English law. Sometimes, however, necessity compels a compromise with the principle. In criminal proceedings before Mr. Justice McCardie at the end of last year, it was essential for the prosecution to prove that two persons were brother and sister. The prosecution tendered the evidence of a witness who said he had always regarded them as such. Counsel for the defence objected that this was mere hearsay and must be rejected. The judge admitted the evidence. To hold it hearsay, he is reported to have said, would be to destroy all the laws of evidence. A man could not know his mother because he could not personally remember his own birth; a father would not be able to say "this is my son" unless he had been present at the birth. In spite of these judicial dicta, it might be more frank to say that such evidence is admitted of necessity because the facts cannot otherwise be established. In genealogical cases the evidence of entries in the family Bible or of tombstone inscriptions is admitted partly on the ground that publicity supplies the want of connexion between the entry or inscription and the particular individual. There is a presumed absence of any interest to misrepresent the truth; it is also presumed that the person who made the entry or ordered the inscription had peculiar means of knowing the facts; in the background somewhere, too, there is probably the feeling that a decision on the available information is necessary and that the information is not available in any other form. But such information will not be allowed as evidence on a question of relationship in non-pedigree cases—e.g., on the question whether two persons are brother and sister under Section 3 of the 1908 Act for the punishment of incest.

ENLARGEMENT OF CHIPPENHAM HOSPITAL.—Last week Lady Margaret Spicer laid the foundation-stone of an extension of this cottage hospital which is to cost about £5000. The enlargements include new men's and women's wards, of eight beds each, two private wards, nurses' quarters, an anæsthetic room, and improvements in the theatre.

EXTENSION OF NEWCASTLE VICTORIA INFIRMARY.—Sir Walter Runciman last week opened a new "Runciman Wing" of the nurses' home at this hospital and announced his gift of £25,000 to the appeal fund of the institution. The wing provides accommodation for 150 nurses. The extension fund, to which Sir Walter Runciman had already given £50,000, had previously reached £113,000. The entire cost of the scheme is estimated at £164,000.

THE DISTRIBUTION OF RADIUM.

I.—IN LONDON.

King Edward's Hospital Fund has at its disposal 10 grammes of radium to lend to London hospitals; nearly one-half of this was the gift of the late Sir Otto Beit, the remainder being purchased through special donations and through money received from the National Thank-offering Fund earmarked for radium. Four grammes were distributed among twenty hospitals during 1929 and by arrangement with the National Radium Trust 4 more grammes have been exchanged for their equivalent in the form of a "bomb," which is on loan with the Westminster Hospital. Last autumn a further allocation of 2 grammes was made among seven hospitals as follows:—

	Milligrammes.
Westminster Hospital	250
St. Bartholomew's Hospital ..	450
Middlesex Hospital..	370
London Hospital	250
Marie Curie Hospital	250
Royal Free Hospital	200
Chelsea Hospital for Women ..	100

making a total of 1870 mg. and leaving 130 mg. as a margin required by suppliers. Three of these hospitals had participated in the previous distribution to twenty hospitals and four had not. Of these allocations 950 mg., in addition to the "bomb," have already been delivered to the hospitals concerned, while specifications have been received for nearly the whole of the balance. Summarised briefly, the position is that 10 grammes have been allocated among twenty-four hospitals, and 9 grammes have been delivered and are in use at twenty-three hospitals.

The following is the list of the twenty-four participating hospitals:

A = Amount of radium allotted by King's Fund.
B = Amount of radium held by these hospitals, including King's Fund allotment (approx.).

	A		B
	Milligrammes.		
Hospitals with Medical Schools:			
Charing Cross Hospital	250	....	250
Guy's Hospital	500	....	500
London Hospital	250	....	2,600
Middlesex Hospital	870	....	1,900
Royal Free Hospital	200	....	700
St. Bartholomew's Hospital ..	450	....	2,000
St. George's Hospital	150	....	350
St. Mary's Hospital	150	....	300
St. Thomas's Hospital	150	....	500
University College Hospital ..	500	....	700
Westminster Hospital	4,250	....	5,900
Other General Hospitals:			
Prince of Wales's General Hospital	150	....	150
Queen Mary's Hospital for the East End	150	....	150
Royal Northern Hospital	150	....	250
West London Hospital	150	....	150
Special Hospitals:			
Central London Throat, Nose, and Ear Hospital	100	....	100
Chelsea Hospital for Women ..	200	....	350
Elizabeth Garrett Anderson Hospital	150	....	150
Golden Square Throat, Nose, and Ear Hospital	150	....	150
Hospital for Women	100	....	250
Marie Curie Hospital	500	....	700
St. Mark's Hospital for Fistula ..	100	....	250
Samaritan Free Hospital for Women	100	....	350
South London Hospital for Women	150	....	150
	9,870	....	18,850
Margin required by suppliers ..	130		
Total King's Fund Radium (mg.)..	10,000		

The total amount of radium available at the voluntary hospitals in London is, of course, in excess of the figure given above.

In the allocation of radium the Distribution Committee of King Edward's Fund had regard to the competence of the staffing and equipment of the hospitals concerned, preference being given to those in which the cure of disease was associated with keen interest in the furtherance of knowledge. Reasonable provision having been made at the first allocation for general and urgent needs, more weight was given at the second to the policy of concentration at radium centres.

II.—IN THE PROVINCES.

In August, 1930, when the Radium Commission presented its first annual report, a total of 18 grammes of radium had been provisionally allotted to national centres, although only 8 grammes had been actually delivered. It was, however, anticipated that the whole 18 grammes (including the 4-gramme bomb) would be in full clinical use by the end of the year. Of this amount 4 grammes was allotted to the National Post-Graduate School thus:—

Mount Vernon Hospital (for clinical work)..	3 grammes
Radium Institute (for radon)	1 gramme

Distribution of the remaining supply of radium has been restricted to 7 centres in England, 4 in Scotland, and 1 in Wales, which possess a University with a medical school and complete clinical courses, and in which one hospital nominated by the local medical faculty has been recognised as a national centre. When the report named was issued the distribution to these centres had taken effect as shown in the following Table:—

National radium centres.		Milligrammes of radium.			
University.	Approved hospital.	Previously in hand.	From Radium Commission. Received.	From Radium Commission. To come.	Total from all sources.
Aberdeen.	Royal Infirmary.	250	250	500	1,000
Birmingham.	General Hospital.	600	950	500	2,050
Bristol.	Royal Infirmary.	176	—	1,500	1,676
Cardiff.	Royal Infirmary.	115	500	—	615
Dundee.	Royal Infirmary.	586	500	—	1,086
Edinburgh.	Royal Infirmary.	600	500	900	2,000
Glasgow.	Western Infirmary.	300	705	1,295	2,300
Leeds.	General Infirmary.	500	—	700	1,200
Liverpool.	Royal Infirmary.	Not stated.	—	1,000	1,000 plus.
Manchester.	Royal Infirmary.	770	980	Not stated.	1,750 plus.
Newcastle.	Royal Victoria Infirmary.	Not stated.	325	835	1,160 plus.
Sheffield.	Royal Infirmary.	334	—	665	334
—	—	3,461 plus.	4,500	8,875	10,671 plus.

At four centres—Aberdeen, Birmingham, Bristol, Newcastle—500 mg. of the radium is to be used for making radon.

ROYAL AUTOMOBILE CLUB HOSPITAL FUND.—About 18 months ago this club established a fund for the benefit of hospitals which deal with a large number of cases arising out of motor accidents. Since the Road Traffic Act now makes it obligatory for insurance companies to pay to hospitals a sum not exceeding £25 in cases where a third party has received treatment following a motor accident the fund has been wound up and the balance in hand divided among the hospitals which had been benefiting by the arrangement.

PUBLIC HEALTH SERVICES

SCHOOL MEDICAL SERVICE IN IRELAND.

THE establishment of a school medical service [1] was authorised in Ireland in 1919, but its inauguration has been delayed until it could be combined with the appointment of county medical officers of health so that the chief school medical officer and the medical officer of health should be one and the same person. This policy has been justified and has secured continuity of treatment for the child from infancy until it leaves school.

Medical inspection is now in operation in Dublin and Cork County Boroughs, Clonmel, and in the counties of Cork, Kildare, Offaly and Louth, and it is to be started in many of the other counties as soon as possible. It has revealed a high rate of decaying teeth, enlarged tonsils and adenoids, and defective vision, but less crippling and tuberculous deformity than was expected. Dental caries was noted in more than half the children examined; enlarged tonsils and adenoids in 18 per cent., and defective vision in 11 per cent. Defects of eyes, ears, teeth, and throat and minor ailments are treated under the scheme; full use is made of existing facilities in hospitals. Orthopædic treatment is not at present an integral part of the scheme but special attention is given to the correction of deformities.

A somewhat high percentage of uncleanliness was found, but in Cork county borough, where a scheme of school medical service has been in operation for six years, the figure dropped from 20·3 per cent. in 1926 to 12·9 per cent. in 1928, while the percentage of under-nourished children is also steadily diminishing. This improvement is attributed to the work of the school nurses in educating parents and following up children treated for septic teeth and tonsils. It has been found that in county areas this work can best be done through the agency of the District Nursing Association. The nurse from this body has known the child from its infancy and has already gained the confidence of the parents. There are now 140 nurses affiliated with the Queen's Institute of District Nursing, and new districts are being opened up.

On the whole the hygienic condition of the schools is below the standard desired, and the equipment is often found to be obsolete. Hot midday meals are provided at an increasing number of schools.

MENTAL HOSPITAL REPORTS.

THE *East Sussex County Mental Hospital* at *Hellingly* had 1255 patients on its books on the first day of last year. The recovery-rate was 38 per cent., a distinct improvement on the previous year, and the death-rate 7·98 per cent. Post-mortem examinations were made in 70 per cent. of the cases. Of the 141 patients discharged during the year, 48 were sent out on trial before discharge, and 29 of these had a money allowance. The Mental After-Care Association has, as usual, done invaluable work for the discharged patients. The system of parole has been extended; 9 men are allowed out of the grounds and 53 men and 129 women are free within the estate. There was a severe epidemic of influenza in the spring, followed by 29 deaths from pneumonia. There were 11 cases of dysentery, some of which were only diagnosed bacteriologically. Four patients died of general paralysis; three of them had been treated with malaria but it had always been doubtful whether they were not too advanced for the treatment to be any good. The ophthalmic and dental surgeons attended regularly, and six major operations were performed. Special attention has been given to occupational therapy and classes are held in almost all the female wards. An attempt has been made to ameliorate the condition of the post-encephalitics, but without much result. Malarial treatment has been continued and a summary of the results is published in this report. The pathologist puts forward a special report of his routine work, public health work for the county, and research work. He discusses uræmia as a cause of death in the insane. He says that he has come to the conclusion that the mental patient is insane because his bacterial resistance is low, and he therefore stresses the importance of treating focal sepsis. There has been an increase in attendance at the out-patient clinic at Eastbourne, 32 new patients having been seen during the year. There is still a shortage of nurses, although everything possible is done to make the staff happy and comfortable. Two nurses passed the State examination and four attendants and eight nurses obtained their R.M.P.A. certificate, for which training is compulsory at this hospital.

At the *Inverness District Asylum* there were 749 people on May 15th, 1930. The recovery-rate for the year was 37 per cent. and the death-rate 7·5 per cent. The general health was good except for ten cases of scarlet fever in the autumn. The institution is overcrowded and the sleeping accommodation for nurses is inadequate. The medical superintendent discusses the future of the asylum in a memorandum and urges the provision of a nurses' home, which would make it possible to provide such essentials as dental and actinotherapy departments, and an isolation hospital. Farm and garden gave a good yield, in addition to providing occupation for many of the patients. During the year three nurses and one attendant gained the R.M.P.A. certificate.

The *Stirling District Board of Control* had 987 certified and 25 voluntary patients in residence on May 14th, 1930. The recovery-rate was 37·3 per cent. and the death-rate 8·4 per cent. Sixteen patients were sent out on trial before discharge. Acute mental ailments preponderate among the admissions and are treated on the verandahs of the reception hospital. The steadily increasing admission-rate is giving rise to some anxiety as to accommodation. The health was good throughout the year, except for some mild influenza. General paralysis was treated by induced malaria and by tryparsamide. In the electrotherapeutic department 136 patients were treated and 26 more had diagnostic X rays. The dental surgeon visits weekly and submits a report of the 218 patients he examined. Occupational therapy is enthusiastically carried on, and the dairy, farm, and garden provide outdoor employment as well as milk, vegetables, and fruit to improve the dietary. The laundry has been brought up to the most modern standard. During the year six nurses and four attendants obtained the R.M.P.A. certificate

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JAN. 3RD, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 164 (last week 135); scarlet fever, 1854; diphtheria, 1430; enteric fever, 29; pneumonia, 1757; puerperal fever, 43; puerperal pyrexia, 101; cerebro-spinal fever, 19; acute poliomyelitis 3; acute polio-encephalitis, 2; encephalitis lethargica, 9; continued fever, 1; dysentery, 25; ophthalmia neonatorum, 97; and plague, 1. (Port of Bristol.) No case of cholera or typhus fever was notified.

The number of cases in the Infectious Hospitals of the London County Council on Jan. 6th–7th was as follows: Small-pox, 224 under treatment, 4 under observation (last week 218 and 3 respectively); scarlet fever, 1688; diphtheria, 2013; enteric fever, 18; measles, 83; whooping-

(*Continued at foot of opposite page.*)

[1] Report of the Department of Local Government and Public Health of the Irish Free State for 1929. Government Publications Sale Office, Dublin. Pp. 252. 2*s.* 6*d.*

CORRESPONDENCE

A RESEARCH INSTITUTE FOR SURGEONS.

To the Editor of THE LANCET.

SIR,—With reference to your leading article of Jan. 3rd we should like to call attention to the fact that while England may lack an institute where surgeons can carry out experimental research bearing on their art, this does not apply to Scotland. In Edinburgh University, the surgical unit under Prof. D. P. D. Wilkie is equipped precisely for such work as is referred to, and for several years a large team of surgeons has been engaged in solving surgical problems by work carried out simultaneously in the wards of the Royal Infirmary and the experimental laboratories of the surgical research department of the University. We have been frequently told by leading surgeons from abroad that this centre for surgical research is one of the greatest in the world at the present time.

We are forwarding this letter because we believe that your readers should be made aware of these facts. We are, Sir, yours faithfully,

STANLEY DAVIDSON, B.A., M.D., F.R.C.P.,
Regius Professor of Medicine, University of Aberdeen.
J. J. R. MACLEOD, M.B., D.S.C., F.R.C.P., F.R.S.,
Regius Professor of Physiology, University of Aberdeen.
Physiology Department, Marischal College, Aberdeen.
Jan. 8th, 1931.

CŒLIAC DISEASE.

To the Editor of THE LANCET.

SIR,—Prof. Leonard Parsons is in slight error in ascribing to me the suggestion that cœliac disease may be due to obstruction of the lacteals by *tuberculous* disease (THE LANCET, Jan. 10th, p. 64). In my paper on Fatty Stools from Obstruction of the Lacteals[1] to which he presumably refers, my conclusion was that "the inability to absorb fats in cœliac disease, and the attendant complications, such as infantilism and tetany, can best be accounted for by an obstructive lesion (probably infective in origin, as the disease is acquired and not congenital) of some part or parts of the lacteal tree." I did not suggest that the infection was tuberculous. I still think that this hypothesis is a very reasonable one, and the more so because it is now generally agreed that the disorder is one of absorption and not of digestion, and because no disease of the only other part of the absorptive system (namely, the intestinal mucosa) has been demonstrated. In the paper referred to I drew attention to the remarkable resemblance in the clinical symptoms and stool analyses in patients suffering from cœliac disease, sprue, and tabes mesenterica with obstruction of the lacteals, and described two cases of the last-named condition in which the lacteals were shown in the course of a laparotomy to be enormously over-distended with chyle. In all three of these conditions we have abdominal distension, bulky fatty stools, similar fæcal analyses, tetany, and other evidences of calcium deficiency.

At first, I believe, physicians for tropical diseases (like the pædiatrists in the case of cœliac disease) were unwilling to accept my hypothesis that an inflammatory obstruction of the lacteals was a part of the pathology of sprue. I was greatly interested, therefore, by a letter from Colonel Davenport Jones[2] in which he described, quite independently, the same distension of the lacteals seen by him during laparotomies for appendicitis in two cases of tropical sprue. This over-distension of the lacteals with fat is presumably an affair of active life when more or less normal food is being ingested. The failure to discover it at necropsy is of no significance. Someday a case of cœliac disease will develop appendicitis, and then I shall not be surprised to learn that the lacteals were found to be over-distended with fat droplets just as they have been shown to be in occasional cases of tabes mesenterica and sprue. In the meantime no fatal case of cœliac disease can be regarded as having had a full investigation unless this includes a careful inspection and microscopical examination of the thoracic duct, the receptaculum chyli, the lacteals, and the mesenteric glands. I am not convinced that a successful injection of the system after death with methylene-blue and in a reverse direction can be held as proof of its functional efficiency during life. The morbid anatomy of the living is sometimes very eloquent.

I am, Sir, yours faithfully.

Wimpole-street, W., Jan. 11th, 1931. J. A. RYLE.

[1] Guy's Hospital Reports, 1924, lxxiv., 1.

ACUTE MYELOGENOUS LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—Dr. Knyvett Gordon pleads for the publication of more cases of acute myelogenous leukæmia. Here is one which has just been under my care at the London Hospital.

The patient, a married woman of 35, previously of good health, was admitted suffering from profuse hæmaturia which had set in suddenly and without pain three days before. Coincidentally with this bruises had appeared on the legs. On examination she was pale but did not seem very ill and the temperature was only slightly elevated. The urine was full of blood and there were large bruises and a few petechiæ on the legs. The mouth and pharynx showed nothing abnormal and the spleen and superficial glands were not palpable. The blood contained 4,000,000 red cells per cubic m.m., 65 per cent. of hæmoglobin, and 82,000 white cells, of which 80 per cent. were myeloblasts. She went rapidly downhill. The

[2] THE LANCET, 1924, ii., 525.

(*Continued from previous page.*)

cough, 125; puerperal fever, 24 (plus 7 babies); encephalitis lethargica, 120; poliomyelitis, 2; "other diseases," 57. At St. Margaret's Hospital there were 15 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox, 3 (1) from enteric fever, 62 (1) from measles, 16 (8) from scarlet fever, 26 (3) from whooping-cough, 43 (5) from diphtheria, 53 (10) from diarrhœa and enteritis under two years, and 60 (11) from influenza. The figures in parentheses are those for London itself.

As in the previous week, there were 17 deaths from measles at Liverpool. Hull reported 11, Bristol, Birmingham, and Newcastle-on-Tyne 4 each, and Rhondda and Swansea 3 each. Eight fatal cases of diphtheria were reported from Liverpool, 3 each from East Ham and Birmingham, and 2 each from Leyton, Portsmouth, and Hull. Diarrhœa caused 7 deaths at Manchester, 4 at Liverpool, and 3 at Birmingham.

The number of stillbirths notified during the week was 311 (corresponding to a rate of 42 per 1000 births), including 50 in London.

temperature rose higher, the liver became considerably enlarged, and the spleen palpable. The mouth and pharynx remained normal, but profuse hæmorrhage from the urinary tract continued and she died five days after admission or just eight days from the onset of the illness.

I agree with Dr. Gordon that sepsis is a result and not a cause in this disease and the absence of any signs of it in the above case bears out this view.

I am, Sir, yours faithfully,

ROBERT HUTCHISON.

Devonshire-place, W., Jan. 10th, 1931.

TREATMENT OF LOBAR PNEUMONIA.

To the Editor of THE LANCET.

SIR,—In view of the interest aroused by the reports on the serum treatment of lobar pneumonia (THE LANCET, Dec. 27th, 1930, pp. 1387 and 1390), one of which emanated from Glasgow, it has seemed to me worth while to make a note on a series of untyped pneumonias, treated on orthodox non-specific lines.

The cases under review are those treated in a ward reserved for male pneumonia, and which receives all cases over 6 years of age. They comprise all such cases admitted during the calendar year 1930, which proved to be true lobar pneumonias. In all 233 cases were treated, and out of that number there were 37 deaths—a case-mortality of about 15·9 per cent. An analysis of these 37 deaths shows that 29 patients died from the usual complications—viz., failing heart and anoxæmia. One of them had a bilateral lesion. Of the remaining eight patients, three were known to have chronic chest trouble, two were operated on for empyema, one had a pleurisy, one died in delirium tremens, and one had a pericarditis. Six of the cases that died were in hospital, on an average, only 27 hours.

The subjoined table shows the age-groups of the cases, and the mortality in each group.

Age-group.	Total cases.	Total deaths.	Case-mortality per cent.
7–9	30	0	—
10–19	64	2	3·1
20–29	47	3	6·4
30–39	25	6	24
40–49	34	10	29·4
50–59	17	8	47
60–69	11	4	36·3
70 over	5	4	80
Total	233	37	15·88

These figures may be of value in making comparisons with cases treated with serum.

I am, Sir, yours faithfully,

TOM ANDERSON, M.B., Ch.B.,
Senior Assistant Physician, City of Glasgow Fever Hospital.

Jan. 10th, 1931.

SODIUM AMYTAL IN LABOUR.

To the Editor of THE LANCET.

SIR,—With reference to the two notes which have recently appeared in your columns (Nov. 15th, 1930, p. 1086, Jan. 10th, 1931, p. 92) on the employment of sodium amytal in labour, although I have only used it in eight cases I have come to the conclusion that there are other and better methods of mitigating the pains of labour and I do not propose to test the product further. In one case grs. 9 was given in divided doses of grs. 3 in capsules by the mouth. The patient was noisy, restless, and difficult to control. She had no remembrance of this. Chloroform was administered for the birth of the head. In two cases the second stage was definitely prolonged as a result of the administration of sodium amytal grs. 6 in divided doses at intervals. In another case which received grs. 6, three one day, and three the next at 10.30 A.M., the child was stillborn at 3 P.M. The amytal may have been to blame. Labour was unassisted and natural.

I prefer to use morphine and nitrous oxide gas or rectal avertin. Patients are thankful for avertin which produces amnesia. Except in one case with sodium amytal amnesia was not produced. She was unsatisfactory as described above. The others were quiet but remembered everything, except the final stages for which chloroform was used.

I am, Sir, yours faithfully,

Plymouth, Jan. 10th, 1931. JAMES RIDDELL.

TREATMENT OF QUINSY BY LAUGHTER.

To the Editor of THE LANCET.

SIR,—Dr. Croft's note in your last issue is interesting in that it gives an actual case of recent occurrence of a phenomenon described in many anecdotes of noted people. Laughing as an accidental cure in quinsy is found mentioned by more than one writer, the most notable instance that occurs to me being the case of Cardinal Mazarin, whose quinsy broke when he laughed heartily at the antics of a monkey seated at the end of his bed. In Webster's "Duchess of Malfi" (iv. 2) occurs the following passage:

> A great physician, when the Pope was sick
> Of a deep melancholy, presented him
> With several sorts of madmen, which wild object
> Being full of change and sport, forced him to laugh,
> And so the imposthume broke.

It is possible that this Pope's case was one of quinsy.

I am, Sir, yours faithfully,

MACLEOD YEARSLEY.

Wimpole-street, W., Jan. 11th, 1931.

PASTEURISATION OF MILK.

To the Editor of THE LANCET.

SIR,—It was with real interest that I read Dr. Macfie's letter. My experience has been that many medical men who have not had the time or opportunity to visit Certified or Grade A (tuberculin tested) dairy farms can be divided into two classes: those who think that the whole movement is Utopian, and those who frankly state that they do not believe that, except on occasions, the quality of the work is maintained. In this way in this country the sanatoriums and hospitals have hindered the clean milk movement, but in Scotland a very different story can be told.

While it is true in certain cases that the bacterial standard (involving non-pathogenic organisms) of Grade A (tuberculin tested) milk has not been maintained, it is equally true that failure has been due to lack of efficiency in carrying out the work and not to its impossibility. There can be no question that it is possible to deliver fresh milk from tubercle-free herds of a high standard of bacterial cleanliness, even in the east end of London. Proof of this statement is found in the fact that some 400,000 gallons of such milk were sent to London quite successfully last year. Some of this milk goes to St. Bartholomew's Hospital, which has now been taking it for a number of years, but the greater part is purchased by the poor people living in Bermondsey. I am sure that Dr. D. M. Connan, the M.O.H. of Bermondsey, or Dr.

Ralph Picken, the M.O.H. of Cardiff, will be glad to give Dr. Macfie any information they can of the success or otherwise of the sale of this milk in their districts.

Those who regard pasteurisation as the solution of the whole milk problem must give more consideration than is generally the case to the following points. (1) Evidence is steadily accumulating that our nation is not being nourished as efficiently as we would like. (2) There is a great deal of work which tends to show that the nutritional value of raw milk is greater than that of milk which has been treated. (3) Statistics concerning the incidence of disease must be derived only from the country in which the problem is being considered, since public health conditions in different countries vary very considerably. (4) There is no doubt that a national policy of encouragement for the sale of fresh milk free from disease would be of inestimable benefit to the dairy farmer and veterinary profession. (5) The mere fact that in Berkshire alone there are some 40 or more herds regularly tested with tuberculin is a clear demonstration that the dairy farmer is anxious to do his work to the very best of his ability. It must be remembered that all these farmers have to bear the whole cost of clearing their herds of tuberculous animals, maintaining them clear, and, in addition, have had not only to bear the cost of altering their cowsheds and dairies to enable them to produce clean milk, but also must pay for the privilege of supplying it. They have to create their own market in face of very considerable difficulties, some of which are certainly due to the apathy of the medical profession and the undoubted opposition of some members of the milk industry who prefer to pasteurise or otherwise treat, for the sake of convenience, all their milk-supply.

That pasteurisation offers no encouragement to the producer is clear from a very human remark I once overheard when two licensed producers who did not know me were conversing in an interval of a meeting. The one was dilating on the extreme care he took over every detail on his farm. The other replied, "Yes, I used to do the same, but now I sell to a firm who pasteurises all my milk, so now I need not trouble in the same way."

I am, Sir, yours faithfully,

C. MADDOCK,
Hon. Secretary, The Certified and Grade A (Tuberculin Tested) Milk Producers' Association.
Foxglade House, Shinfield, Reading, Jan. 12th, 1931.

CLINICAL CONDITIONS ASSOCIATED WITH ACHLORHYDRIA.

To the Editor of THE LANCET.

SIR,—In their interesting paper in your last issue Dr. J. F. Wilkinson and Dr. T. H. Oliver say that I regard achlorhydria as a common factor in the production of cancer of the stomach. I have never made such a statement. On the other hand, if they will read my Schorstein Lecture,[1] they will find abundant evidence that chronic gastritis is a common precursor of cancer of the stomach, and that the achlorhydria found in 60 per cent. of cases of the latter is not secondary to the cancer but is a result of the chronic gastritis which preceded it. This is one reason why I regret that Dr. Wilkinson and Dr. Oliver have not distinguished between achylia gastrica and achlorhydria. Achylia is generally due to an inborn error of secretion and is often familial, but it may also be caused by severe gastritis, which has led to destruction of the oxyntic cells of the stomach. Achlorhydria includes achylia, but also the much larger group of cases in which the absence of free acid is due to chronic gastritis and in which no permanent damage has been done to the mucous membrane.

In achylia gastrica the correct treatment is the administration of 1 to 2 drachms of dilute hydrochloric acid three times a day, but in the achlorhydria secondary to chronic gastritis this treatment is bad, as, though it may relieve the symptoms, it has no effect on the underlying condition, so that recurrence of symptoms occurs directly no more acid is taken, and malignant degeneration of the inflamed gastric mucous membrane may develop at some future period. The correct treatment is to remove the cause, the most common being septic foci in the mouth, throat, or nose, alcoholic excess, and to a less extent indigestible food and insufficient mastication. At the same time the stomach should be washed out every morning with dilute hydrogen peroxide (1 drachm to the pint) till no more mucus is present. This treatment, which results in the restoration of a normal gastric secretion and the cure of the primary gastritis, should always be undertaken when excess of mucus is present in the gastric contents. During the last few years we have found that well over 50 per cent. of cases of achlorhydria are curable in this way, including all our cases of achlorhydria with rheumatoid arthritis and asthma, most of them with gastrogenous diarrhœa and cholecystitis, and even, as you mention in your leading article, two cases of Addison's anæmia.

I am, Sir, yours faithfully,

ARTHUR F. HURST.
Bex, Switzerland, Jan. 11th, 1931.

[1] THE LANCET, 1929, ii., 1023.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been made: Surg. Comdrs. R. A. Brown to *President* for post-graduate course, and to *Victory*, for Haslar Hospital; W. Bradbury to *Victory*, for Haslar Hospital, for four months' general professional course; and H. R. B. Hull to *Despatch*.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. T. A. Brand to *Vivid*, for R.N. Barracks.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. S. L. Pallant retires on retd. pay.
Maj. J. A. Bennett retires on retd. pay.
Lt. W. A. R. Ross is secd. for duty with the Sudan Def. Force.

TERRITORIAL ARMY.

Lt. W. C. Armstrong to be Capt.
J. D. Pike to be Lt.

ROYAL AIR FORCE.

Flight Lt. J. E. Foran is transferred to the Reserve, Class D.ii.

INDIAN MEDICAL SERVICE.

Lts. B. D. Khurana and J. Singh to be Capts. (prov.) (on prob.).

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.

Twenty-five permanent commission in the R.A.M.C. are being offered to qualified medical practitioners under 28 years of age. Candidates will be required to present themselves in London for interview and medical examination, but there will be no entrance examination. At the same time, a certain number of temporary commissions under similar conditions as regards age and qualifications will also be offered. Applications should reach the Under Secretary of State, the War Office (A.M.D.1), Whitehall, London, S.W., not later than Jan. 19th.

EXTENSION OF WESTMORLAND COUNTY HOSPITAL.—A new wing has been added to this institution, which provides 20 additional beds, and flats for the resident medical officer and matron.

OBITUARY

JAMES A. ADAMS, M.D., F.R.F.P.S.G.,

CONSULTING SURGEON TO THE ROYAL INFIRMARY, GLASGOW, AND FORMERLY PRESIDENT OF THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS.

IT is always of interest to observe the part played by heredity amongst doctors, and fortunately, in spite of the changes in medical practice, the inclination for the sons of doctors to enter the medical profession seems not to alter. The essentially conservative mind of the professional classes of the North of England, and of Scotland, shows itself in the development of a family-inherited love of the practice of medicine, and the desire to see the sons follow the father's footsteps. Yorkshire boasts with credit of the Teales and the Heys; Lancashire of the Thomas and the Jones families; Scotland of the Monros, and the Marshalls and Cowans. Such "a dynasty of doctors" (as a member of the family called it) exists in the Adams of Glasgow, and the Maxwell-Adams of Lanark, of whom no fewer than 16 members belonged to the profession and could trace their personal and medical ancestry for about 150 years in direct descent.

DR. JAMES ADAMS.

James A. Adams, who died on Dec. 28th, 1930, at the age of 73, belonged to the Glasgow branch of the family, being the son of the late Dr. James Adams of that city. He was a brilliant student in the University of Glasgow, graduating in 1878 M.B., C.M. with commendation, and in 1881 M.D. with honours. Having surgery as his professional objective he became demonstrator of anatomy under John Cleland, professor of anatomy in the University, and early gave evidence of his keenness of observation and anatomical insight. In 1880 a discussion in the Glasgow Medico-Chirurgical Society on Cerebral Abscess and its Association with Diseases of the Ear was initiated by Dr. Thomas Barr, Glasgow's most distinguished aurist at that time, and apparently the whole subject of the cerebral complications of chronic middle-ear disease was much under discussion. Following upon the discussion Dr. Adams carried out an elaborate investigation on the anatomy of the temporal bone, and published his research in the *Glasgow Medical Journal*, June, 1881, under the title of Certain Anatomical Relations between Abscess of the Brain and Aural Disease. The main argument was to show that there are "anatomical peculiarities of structure in the organ of hearing which differ in the infant and in the adult, which explain the greater frequency of abscess of the brain in adult life as originating from disease of the ear, and that under certain conditions there is an abnormal state of the cerebral circulation which admits of a direct vascular connexion between the ear and the brain." This research paved the way for the brilliant work on Abscess of the Brain which followed a decade later. In March, 1882, in the Medico-Chirurgical Society, he pointed out the anatomical vascular relations of the middle ear and mastoid cells of the brain, and urged the operation of trephining the mastoid process in cases of aural disease where head symptoms appeared even in the slightest degree; and he went further and advocated opening the mastoid antrum in cases of chronic otitis media. His work in the anatomy department led him to suggest the advisability of shortening the round ligaments through incisions over the inguinal canals in the treatment of uterine displacement. This "new operation for uterine displacement," published in the *Glasgow Medical Journal*, June, 1882, soon became known as the Adams-Alexander operation. Adams was very careful to give Dr. William Alexander, of Liverpool, all the credit for priority in publishing successful cases of the operation, though he was correct in pointing out that he had been for 18 months previous to the publication teaching the operation and discussing it with his colleagues. Other papers of this period were on Diaphragmatic Hernia and Voluntary Dislocation of the Hip and Jaw. In 1895 he performed the first successful pylorectomy for malignant disease in Scotland; the case is fully recorded in the *British Medical Journal*, April, 1896; the technique employed was the same as that of Billroth. Dr. Adams showed himself, by these early publications, to be possessed of a considerable degree of originality of anatomical thought in surgery, and his careful practical work in the out-patient department of the Royal Infirmary is well exhibited in a record published in the *Glasgow Medical Journal* of one month's work in the out-patient department, pointing out that the out-patient department was easily the best field for the young surgeon and the student alike. Promotion to full surgeon came to him early in his career, and in 1892 he succeeded Macewen, who was appointed to the chair of surgery in the University. For many years Adams worked in one of the old Lister wards of the Infirmary, and the spirit and tradition of the great master were enthusiastically followed. He was a chief for the long period of 27 years, from 1892 to 1919, carrying on during the war after his term of office had expired. When the Princess Louise Hospital for Limbless Sailors and Soldiers was organised he offered his services as one of the surgeons, and held the post till his retirement.

Dr. Adams was a lover of his profession and ambitious for its honour. He was President of the Royal Faculty of Physicians and Surgeons in 1911, and the Faculty's representative on the General Medical Council from 1920 to 1928, and a sympathetic and knowledgeable administrator of the affairs of the Royal Infirmary. He proved a wise counsellor in medical education.

"Adams," says the writer of a personal appreciation, "was in all respects a notable personality in medical Glasgow. He lived the medical life to its fullest, and found time for its pleasures too. As a raconteur, and a retailer of merry quips and good-tempered raillery, he had no equal. He had many friends, and had the gift of keeping his friendships always in repair. It was a matter of great gratification to him, and is to the profession in Glasgow as well,

that the family name and traditional love of the profession of medicine are being carried on so efficiently by his son."

Dr. Adams died at his residence, Balearnock, Shandon, where he had been living in retirement for the last few years, and the funeral took place at Helensburgh.

M. FITZMAURICE-KELLY, M.B. Lond., F.R.C.S. Eng.

Mr. M. Fitzmaurice-Kelly, who died at Hove, aged 52, on Jan. 5th, had practised surgery at Brighton for ten years, and his judgment and operative skill was much valued by his colleagues. He received his medical education at St. Mary's Hospital, obtaining the senior entrance scholarship in Natural Science in 1897, and qualified M.R.C.S., L.R.C.P. in 1902, being appointed house physician the next year. In 1904 he became successively house surgeon and casualty house surgeon, and in 1905 took the gold medal in the B.S. Lond., and became F.R.C.S. The years 1906 to 1908 Mr. Kelly spent as demonstrator of anatomy in St. Mary's Medical School, being then appointed surgical registrar to the hospital. He had thus acquired considerable surgical experience when he joined the R.A.M.C., within a week of the outbreak of war, as temporary captain, afterwards being promoted to major. He was first attached to a general hospital at Boulogne, and then acted as surgical specialist at Calais, and later for a short time at a casualty clearing station. The severe weather conditions in France in the winter of 1916–17 injured his health; he was invalided home wounded in the summer of 1918, and Armistice Day found him still in hospital. He returned to duty as officer in charge of the surgical wards of the Royal Pavilion Hospital at Brighton, being attached also to the Shepherd's Bush special surgical hospital and to Queen Mary's Auxiliary Hospital, Roehampton. Deciding to settle in Brighton, Mr. Fitzmaurice-Kelly was made surgeon to the Royal Alexandra Hospital for Children and to the Hove General Hospital, and later assistant surgeon to the Royal Sussex County Hospital. He soon acquired and retained till his last illness a prominent position as a surgical consultant in Sussex, and his opinion was greatly valued. While at St. Mary's his main preoccupation was urinary surgery, but his experience at Shepherd's Bush and at Roehampton stimulated his interest in orthopædics, and many of his contributions to the Brighton and Sussex Medico-Chirurgical Society dealt with this branch of surgery. His operation for amputation at the hip-joint was widely known and practised. Mr. Fitzmaurice-Kelly had a fertile and resourceful mind and a strong sense of duty. He was well liked by patients and colleagues, and deep sympathy will be felt for his widow and daughters.

Mr. F. E. Feilden writes: "As a colleague at the Royal Alexandra Hospital for Children, I had ample opportunity of appreciating Fitzmaurice-Kelly's sterling qualities and outstanding personality. He was not a particularly rapid operator, but he was essentially thorough, and spent considerable time in planning an operation and the post-operative treatment. He was a general surgeon of the first order, with a profound knowledge of orthopædic surgery. Probably his most outstanding publication was that dealing with the cure of hernia by means of a living suture, published in 1927. For many years Mr. Fitzmaurice-Kelly was a prominent member of the local branch of the British Medical Association and of the Brighton and Sussex Medico-Chirurgical Society. He had remarkable gifts as a debater, and even those who did not agree with his line of thought admired the clarity with which he presented his case. During the past year Mr. Fitzmaurice-Kelly's health had given his friends considerable anxiety. He faced the gravity of his illness with the same courage and cheerfulness that characterised all his activities."

PANEL AND CONTRACT PRACTICE

Alleged Irregular Prescribing.

AN inquiry committee, consisting of a barrister and two doctors, recently examined certain charges made against a medical practitioner by a borough insurance committee. These charges alleged six different forms of irregularity on the part of the practitioner when prescribing for panel patients, but some of them were later withdrawn. The facts proved or admitted at the inquiry come under three headings:—

(1) On Jan. 27th, 1930, the respondent practitioner sold to a patient a quantity of vaccine ointment for 4*s*. 6*d*., saying that he did not think it was an ointment which he could obtain for her as an insured person. He then made out a prescription in her name on Form G.P. 26, and in fact obtained a similar quantity of ointment from a chemist. In August, when he knew that complaints were being made against him, he repaid the 4*s*. 6*d*. to the patient and told her that he had obtained the ointment as he did. Explaining this, the respondent said that on Jan. 27th, after the patient left, he thought the matter over and decided to try to get the ointment for her on a prescription. After receiving it he attended her for a confinement, and forgot all about the money. When he remembered it he paid her.—The inquiry committee found that the charge of 4*s*. 6*d*. to an insured person in the circumstances described cannot be justified.

(2) On three dates in March and April the respondent prescribed on Form G.P. 26, 36 cachets for one of his insured patients. He obtained them direct from a chemist, but did not use them in the treatment of this case. Similarly, certain ampoules were prescribed, but not used, for another patient; in this case, however, the patient admitted that she refused to let him give her an injection.—The inquiry committee accepted this explanation.

(3) In seven other cases it was established that the respondent had written prescriptions on Form G.P. 26 and obtained articles himself direct from the chemist. In one case he said he feared to entrust the patient with 100 luminal tablets at once, and therefore gave them in quantities of about ten at a time. He prescribed 100 so as to keep down the cost of prescribing. Most of the other articles were for use by himself for insured persons, and it seemed convenient to obtain them direct.—The committee held that the practice thus described is liable to lead to abuse, "but we were not referred to, and are not aware of, any express prohibition of it in the Medical Benefit Regulations or Terms of Service. . . . There is no evidence to justify us in saying that the respondent adopted the practice of obtaining articles direct from chemists for any ulterior motive."

The inquiry committee recommended that each of the parties should pay their own costs. It stated

that the allegations of the borough insurance committee had not been in substance substantiated, and might have been previously investigated by the medical services subcommittee. On the other hand, the respondent's conduct was undoubtedly liable to expose him to suspicion, and he had only himself to blame for being called on to justify or excuse it.

The Minister of Health, having considered the inquiry committee's report, has decided not to remove the respondent practitioner's name from the medical list. He proposes, however, to withhold £5 from the monies payable to the insurance committee in respect of medical benefit, and this will be deducted from the remuneration payable to the practitioner. The Minister makes no order about the costs of the inquiry.

Disciplinary Procedure.

Amendments of disciplinary procedure in national health insurance practice were suggested in a report presented on Tuesday last to a meeting of the Paddington Medical Society. The suggestions are grouped under ten headings:—

(1) All questions involving penalties of any degree should be removed from the punitive jurisdiction of the Ministry of Health and should be judicially determined by a medico-legal tribunal constituted for the purpose and subordinate to the General Medical Council which would have authority to apply suitable penalties.

(2) The proposed area administrative medical officer should advise and assist the clerk to the insurance committee in matters relating to discipline when a practitioner is concerned.

(3) In an appeal to the Minister he may determine the appeal without an oral hearing at his discretion. This should only be allowed when the appeal is based on an alleged irregularity in procedure on the part of any committee having previously dealt with the case.

(4) No distinction should be recognised between private and insured patients in respect of the following voluntary or automatic remedies which should be recognised as adequate for disciplinary purposes for insured and non-insured persons alike:

Change of doctor.

Police and/or county court proceedings.

Action by General Medical Council.

(5) The bulk of increased certification is due as we have shown, to causes beyond medical control. Whilst we consider that "laxity" on the part of a doctor should continue to be amenable to control as at present, any gross carelessness or neglect is accurately described as "false certification" and should for disciplinary purposes come logically under the control of the General Medical Council. At first sight it appears that the insurance practitioner enjoys a privileged position in respect of control by insurance and panel committee of his certification. This is not so inasmuch as their control is *additional* to that of the General Medical Council.

We suggest that one respect in which the General Medical Council could be reorganised is that such disciplinary control of insurance certification as appears necessary should be administered by a body definitely subordinate to the General Medical Council. Advantages following would be:—

(*a*) Uniformity in the definition of "laxity" and a clearer distinction between this and the factors in the increase of certification over which the practitioner has no control.

(*b*) The removal from medical administration in the Ministry of Health and in the local committees of the judicial and punitive elements which properly belong to the law courts, the General Medical Council, or elsewhere.

(6) The application of a suitable surcharge to patient, as recommended in respect of certain medicines, &c., prescribed, would deal with the bulk of the existing difficulties in connexion with prescribing. Inefficient prescribing should primarily be inquired into as at present. But the institution and application of penalties should again be in the hands of a suitable medico-legal tribunal constituted ad hoc by the General Medical Council.

(7) As these changes in any case would take a certain amount of time to affect we suggest, as an immediate measure, that all decisions adverse to a practitioner should be subject to appeal to a higher court.

(8) These recommendations are made with special regard to the situation which is likely to arise if and when extensions of the Acts ensue.

(9) Administrative control and regulation, of course, should remain as at present under the jurisdiction of the Minister except that penalties or dismissal would thus depend on the discretion of a professional disciplinary tribunal external to the Ministry of Health.

(10) We recognise that these recommendations depend not only on a considered extension of the present functions of the General Medical Council but also, on an alteration of the present constitution of the Council such as would give the insurance practitioner, as such, a more equitable representation thereon.

MEDICAL NEWS

University of Cambridge.

Diploma in Medical Radiology and Electrology.—The following recommendation from the Faculty Board of Medicine was passed by the Senate on Dec. 19th, 1930: "The Faculty Board have had under consideration the annual report of the committee for medical radiology and electrology, as well as other information relating to the Diploma. The Board are convinced by the evidence laid before them that the Diploma continues to meet a real need, and that the standard of the teaching and of the examination is satisfactory. The financial position also is satisfactory. The Board therefore are of opinion that the Diploma should be re-established for a period of three years, but that, in view of the rapid growth in allied subjects, the position and scope of the Diploma and the arrangements made with the British Institute of Radiology should be reviewed before the expiration of that period."

Royal College of Surgeons of England.

A meeting of the Council was held on Jan. 8th, with Lord Moynihan, the President, in the Chair.

Mr. Russell J. Howard, Mr. E. C. Hughes, and Mr. L. E. C. Norbury were admitted Members of the Court of Examiners.—Mr. Wilfred Trotter was appointed Hunterian Orator for 1932 and Mr. W. Sampson Handley Bradshaw Lecturer for 1931.—Mr. J. H. Thompson, of King's College, was appointed Melchett research scholar, the subject of his research to be Investigation into the Influence of the Parathyroid Gland on Processes of Growth.—The Hallett Prize was awarded to Mr. J. C. R. Hindenbach, of the University of Otago, on the result of the recent examination in anatomy and physiology for the Fellowship.

Diplomas of Membership were granted to S. S. Ahluwalia (Punjab and Univ. Coll.), W. N. Chalmers (Liverpool), and E. M. Sharples (St. Bartholomew's). Diplomas in psychological medicine and laryngology were granted jointly with the Royal College of Physicians.

It was reported that the Primary Examinations for the Fellowship to be held in the Dominions in 1931 would begin on August 11th at Melbourne and on Oct. 20th at Toronto.

The Council adopted the following answer to the resolution passed at the annual meeting of Fellows and Members on Nov. 20th last: "The main functions of the College are to promote and encourage the art and science of surgery for the common weal, and for this purpose to conduct the examinations of the College and to maintain the great Museum and Library placed under its care. In carrying out these functions the Council organises lectures and demonstrations, provides facilities for and encourages research, fosters social intercourse and the amenities of the profession, and in every way possible renders the College an instrument for the advancement of surgery in its widest sense, not only for the benefit of the Members and Fellows, but the whole profession throughout the Empire. In the opinion of the Council these functions are well carried out under the present constitution; after further and prolonged deliberation the Council has therefore decided that it is not desirable to alter the constitution of the College by providing for the direct and separate representation of Members of the College upon the Council. The decision of the Council is in conformity with the opinion expressed three years ago by the body of Fellows of the College who are the electorate."

University of Liverpool.

At recent examinations the following candidates were successful:—

D.P.H.

E. Hughes and J. W. Pickup.

University of Glasgow.

Dr. John Shaw Dunn has been appointed to the St. Mungo (Notman) chair of pathology in succession to the late Dr. J. H. Teacher. Prof. Dunn is at present professor of pathology in the University of Manchester.

Royal Sanitary Institute.

On Tuesday, Feb. 10th, at 6 P.M., at 90, Buckingham Palace-road, London, S.W., Lieut.-Colonel William Butler, Senior Medical Officer, London County Council, will open a discussion on Recent Methods of Sewage Treatment.

The Huxley Lecture.

The staff of Charing Cross Hospital and Medical School has invited Prof. Sigmund Freud to deliver the next biennial Huxley Lecture at the Medical School. Previous lecturers include Lister, Virchow, Pavlov, Flexner, and Gowland Hopkins.

The National Diet.

Prof. E. P. Cathcart will deliver two lectures, under the auspices of the University of London, on Feb. 23rd and 24th, on the National Diet. The lectures will be given at the London School of Hygiene and Tropical Medicine, Gower-street, at 6 P.M. on each date, and the chair will be taken by Sir Walter Fletcher on one day and by a member of the Board of Management of the School on the other. Admission is free.

Harveian Society of London.

This society is embarking on its centenary year, having been founded in 1831. At the annual general meeting on Jan. 8th the following officers were appointed:—President: Sir Thomas Horder. Vice-Presidents: Dr. Montague Smith, Dr. K. Playfair, Dr. H. C. H. Bull, and Dr. G. E. Oates. Hon. Secretaries: Mr. Cecil P. G. Wakeley and Dr. R. Cove-Smith. Treasurer: Dr. G. de B. Turtle. Council: Dr. A. C. Alport, Dr. W. F. Christie, Dr. Macdonald Critchley, Dr. A. H. Douthwaite, Mr. H. C. Edwards, Mr. D. C. L. Fitzwilliam, Dr. E. L. Gowlland, Prof. Tom Hare, Dr. T. C. Hunt, Dr. G. E. Orme, Mr. H. Rivers Pollock, and Mr. H. L. C. Wood.

Lister Institute of Preventive Medicine.

On the occasion of the recent retirement of Sir Charles Martin and Prof. Arthur Harden from the staff of the Institute, many of their colleagues and other research workers, past and present, met in the library of the Institute to offer parting gifts to their two distinguished colleagues. Prof. J. C. G. Ledingham, who is succeeding Sir Charles Martin as Director, presided over the meeting, and referred to the fact that only a few years ago a very similar gathering had assembled to express the great satisfaction which the conferment of knighthood on their Director had given them, and to celebrate the occasion by presenting him with his portrait. The staff of the Institute, he said, was losing the splendid services of both their friends because they had reached the prescribed age-limit, but they had completed their terms while still in their full mental vigour. Sir Charles had directed successfully the activities of the Institute for 27 years, the success of his administration being due to his tact, his business ability, and the catholicity of his scientific interests. Prof. Harden had served the Institute for 33 years and as Biochemist-in-Chief during that period had made his department an important centre of biochemical research. Only a year ago he had been awarded a Nobel prize in Chemistry for his work on fermentation. It was undoubted that the departure of Sir Charles Martin and Prof. Harden would mean a severe loss to the Institute's forces, but it was to be hoped that the traditions they had set would long remain a potent source of inspiration to their successors. On behalf of the many subscribers at home and abroad Miss Harriette Chick was called upon to present to Sir Charles and Lady Martin a silver coffee service designed and executed by Mr. P. S. Alexander, of Walberswick, Suffolk. Miss Muriel Robertson then unveiled and presented to Prof. Harden his portrait in oils by Mr. Neville Lewis. Sir Charles Martin and Prof. Harden, in returning thanks for these gifts, referred in reminiscent terms to the developments they had witnessed in the scope of the Institute's activities during their long service, and at the close of the reception which concluded the ceremony, they took leave of their colleagues.

Sir Charles and Lady Martin sailed on Jan. 2nd for Cape Town en route to Australia, where, as announced already in our columns, Sir Charles is taking up the position of Director of the Division of Animal Nutrition under the Commonwealth Council for Scientific and Industrial Research.

Medical Society of Individual Psychology.

Members of the medical profession are invited to hear Dr. Alfred Adler address this society at 11, Chandos-street, W., at 8.30 P.M. to-day, Friday, Jan. 16th. His subject is the Structure of Neuroses.

Post-graduate Course in Tuberculosis.

Under the auspices of the Joint Tuberculosis Council a post-graduate course will be held at the City of London Hospital for Diseases of the Heart and Lungs and elsewhere from Feb. 16th to 21st. Particulars may be had from Dr. William Brand, 8, Highway-court, Beaconsfield, Bucks.

British Empire Cancer Campaign.

Sir Charles Gordon-Watson presided at a meeting of the Grand Council on Jan. 12th. A grant of £6000 was made to the Middlesex Hospital towards cancer research in the year 1930–31, and a further grant of £600 making a total of £3600 since 1925, was authorised to the cancer research committee of the Marie Curie Hospital for the services of its medical research officer.—Sir Cuthbert Wallace, Director of the Radium Institute, London, was elected a member of the Grand Council and Prof. F. T. G. Hobday, Principal of the Royal Veterinary College, was also invited to become a member.—The Council approved the arrangements in connexion with the Garton prize of £500 and gold medal which is to be awarded to the person, or persons, submitting the best original dissertation on The Early Diagnosis of Cancer by December, 1931. It was announced that the Biological Effects and Mode of Action of Radiations upon Malignant and other Cells will be the subject for the second Garton Prize and Medal, the dissertations for which must be received by December, 1933.

It was reported that the popular handbook entitled "The Truth about Cancer" issued to the public on Dec. 4th, was now obtainable from all booksellers or direct from the publishers, Messrs. John Murray, at 2*s.* 6*d.* per copy. The book had been received with appreciation in all directions, and later editions would be issued so that it would keep abreast of developments.

Donations and Bequests.

Among other bequests the late Mr. John Bromilow Holt, of Heywood, Lancs, left £1000 each to the Manchester Royal Infirmary, the Bury Infirmary, St. Dunstan's Hostel for Blinded Sailors and Soldiers, and the National Society for the Prevention of Cruelty to Children; £750 each to the Royal Society for the Prevention of Cruelty to Animals, Dr. Barnardo's Homes, and Lord Mayor Treloar's Cripples Hospital; and £250 to the Heywood Crippled Children's and Holiday Home, Congleton.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Jan. 20th.—5.30 P.M., GENERAL MEETING OF FELLOWS. 8 P.M., PATHOLOGY.

WEDNESDAY.—8.30 P.M., Fellows and their friends will be received in the Library by the President and Mrs. Watts Eden. At 9.15 P.M. Dr. Arnold Chaplin will give an address entitled Great Figures in History, or Misconceptions Removed. Various objects of interest will be exhibited in the Library.

THURSDAY.—8.30 P.M., UROLOGY. Paper: Dr. S. Gilbert Scott: The Significance of the Radiological Renal Outline.

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.). 8 P.M., EPIDEMIOLOGY. Paper: Prof. E. L. Collis: Recent Views on Pneumonoconiosis.

HUNTERIAN SOCIETY.

MONDAY, Jan. 19th.—9 P.M. (at Apothecaries' Hall, Water-lane, E.C.), Dr. Arnold Lorand (Carlsbad): Problem of Rejuvenation.

MEDICO-LEGAL SOCIETY.

Thursday, Jan. 22nd.—8.30 P.M. (at 11, Chandos-street, Cavendish-square, W.), Dr. Nathan Raw: The Coroner's Verdict in Cases of Suicide, to be followed by a discussion.

LONDON CLINICAL SOCIETY.

TUESDAY, Jan. 20th.—9 P.M. (at The London Temperance Hospital), Dr. Geoffrey Evans will open a discussion on the Importance of Diet in Health and Disease.

CHELSEA CLINICAL SOCIETY.

TUESDAY, Jan. 20th.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W., preceded by dinner at 7.30 P.M.). Discussion on the Treatment of Eczema. (Opener: Dr. Henry MacCormac.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.
MONDAY, Jan. 19th.—5 P.M., Mr. Victor Bonney: Results and Technique of Myomectomy.
WEDNESDAY.—5 P.M., Mr. Basil Hume: Pathology of Diaphragmatic Hernia.
FRIDAY.—5 P.M., Mr. Tudor Thomas: Grafting of the Cornea in Rabbits.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 19th, to SATURDAY, Jan. 24th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square. Mon., at 4 P.M., free lecture by Mr. V. Zachary Cope on the Acute Abdomen. (Early Diagnosis Series.) —METROPOLITAN HOSPITAL, Kingsland-road, E. Mon., at 2 P.M., free post-graduate demonstration in Out-patient Department by Dr. N. H. Hill.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Tues., at 2.30 P.M., free post-graduate demonstration on Injection Treatment of Hæmorrhoids by Mr. Rodney Maingot.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Jan. 19th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.
MONDAY, Jan. 19th.—3 P.M., Mr. D. S. Rabagliati: Veterinary Science in Relation to Public Health.
WEDNESDAY.—3 P.M., Prof. J. W. H. Eyre: Shell-fish and the Public Health. 4 P.M., Mr. F. C. Minett: Certain Diseases Common to Man and the Lower Animals.

UNIVERSITY OF LONDON, University College, Gower-street, W.C.
TUESDAY, Jan. 20th.—3.30 P.M., Mr. Pryns Hopkins: The Need of Psychologists and the Menace from Charlatans. (First of a course.)

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.
TUESDAY, Jan. 20th.—5.15 P.M., Dr. J. A. Murray: Induction of Cancer by Tar and other Agents.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Jan. 22nd.—9 P.M., Sir Charlton Briscoe: Postural Pulmonary Complications.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Jan. 22nd.—5 P.M., Mr. W. M. McCullagh: Treatment of Post-partum Hæmorrhage.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Jan. 23rd.—4 P.M., Mr. Archer Ryland: Demonstrations of Museum Specimens.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Jan. 20th.—3.15 P.M., Mr. F. D. Saner: Selected Cases.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Jan. 20th.—5 P.M., Dr. J. A. Drake: Urticaria.
THURSDAY.—5 P.M., Dr. W. J. O'Donovan: Exfoliative Dermatitis.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.
THURSDAY, Jan. 22nd.—3 P.M., Dr Wilfred Harris: Clinical Demonstration.

Appointments

CULLEN, C. K., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Tuberculosis Officer, Shoreditch.

DAVIES, D. B., M.B. Ch.B. Edin., Medical Officer for Pontlottyn, Glam.

MOIR, J. H., M.D., Ch.B. Aberd., D.P.H., to be Certifying Surgeon under the Factory and Workshop Acts for Church Gresley, Derby.

ROBERTS, J. T. C., M.B., Ch.B. Liverp., D.P.H., Medical Officer of Health, Dukinfield and Hollingworth.

RUSHWORTH, J. A., L.R.C.P. Lond., M.R.C.S., Assistant to Medical Superintendent, Liverpool Sanatorium.

WYNN-WILLIAMS, N. R., M.B., B.S. Lond., Resident Assistant Physician to Montana Hall, Montana, Switzerland.

Gloucester County and City Mental Hospitals: KNIGHT, C. V., M.D. Lond., L.R.C.P. Lond., M.R.C.S., Consulting Surgeon; TERRY, H. CAIRNS, M.B., Ch.B. Birm., Consulting Physician; NICCOL, W., M.B., Ch.B. Glasg., Consulting Oculist; BERNSTEIN, S., L.R.C.P. Lond., M.R.C.S., Consulting Ear, Throat, and Nose Surgeon; GOSS, J., M.B., B.Chir. Camb., Consulting Radiologist; and DAVEY, E. N., M.B., B.Ch. N.U.I., Consulting Pathologist.

Vacancies

For further information refer to the advertisement columns.

Altrincham General Hospital.—Sen. and Jun. H.S.'s. At rate of £150 and £120 respectively.
Ascot, Heatherwood Hospital.—Res. Asst. M.O. £300.
Bedford, Bedfordshire Sanatorium.—Res. Asst. M.O. £400.
Birmingham, Dudley Road, Hospital.—Jun. Asst. M.O.'s. Each at rate of £200.
Birmingham General Hospital.—Res. Anæsthetist. £120. Also Res. H.P. and H.S. Each £70.
Bolton Infirmary and Dispensary.—Cas. O. At rate of £150.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bradford Royal Infirmary.—Two H.S.'s. Each at rate of £150.
Brighton, Royal Sussex County Hospital.—Hon. Asst. Surgeon.
Brighton, Steyning Institution.—Res. M.O. and Asst. Administrative County M.O. £600.
Bristol Royal Infirmary.—H.P.'s and H.S.'s to Special Depts. All at rate of £60.
Bury St. Edmunds, West Suffolk General Hospital.—Res. H.P. and Obstet. O. £150.
Cambridge, Papworth Village Settlement.—2nd and 3rd Asst. M.O.'s. At rate of £400 and £200 respectively.
Charing Cross Hospital, W.C.—Asst. Obstetric Physician.
Chelsea Hospital for Women, Arthur-street, S.W.—Registrar. £50.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Dudley, Guest Hospital.—Asst. H.S. £160.
Durham, Seaham Hall Sanatorium.—Med. Supt. £600.
East London Hospital for Children, Shadwell, E.—H.S. At rate of £125.
Epsom, Surrey, Horton Mental Hospital.—4th Asst. M.O. £575.
Evelina Hospital for Children, Southwark, S.E.—Hon. Dental Surgeon. H.P., Cas. and Out-patient Officer. Also H.S. All at rate of £120.
Golden-square Throat, Nose, and Ear Hospital, W.—Hon. Anæsthetist.
Hertford County Hospital.—H.P. £150.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—H.P. At rate of £100.
Hospital for Sick Children, Great Ormond-street, W.C.—Surg. Reg. £300. Also Refraction Asst. for Ophthalmic Dept. 1 gn. each attendance.
Hospital for Tropical Diseases, Endsleigh-gardens, W.C.—Asst. Radiologist.
Ilford, King George Hospital.—Hon. Gynæcological Surgeon. Also H.S. At rate of £100.
Leeds Public Dispensary.—Jun. Res. M.O. £150.
Leicester, City Isolation Hospital and Sanatorium, Groby-road.—Jun. Asst. M.O. £300.
Lincoln County Hospital.—Jun. H.S. At rate of £150.
Liverpool County Borough Local Educational Authority.—Jun. Asst. School M.O.'s. Each £500.
Liverpool Eye and Ear Infirmary, Myrtle-street.—H.S. £100.
Liverpool, St. Paul's Hospital, Old Hall-street.—H.S.. At rate of £120.
London Homœopathic Hospital, Gt. Ormond-street and Queen-square, Bloomsbury, W.C.—Three Res. M.O.'s. Each £100.
Manchester Royal Infirmary.—Jun. H.S. and Cas. O. for Central Branch, Roby-street. £100–£200.
Manchester, St. Mary's Hospitals.—Sen. Asst. M.O. for Children's Out-Patient Dept. Also Jun. Asst. M.O. At rate of £100 and £50 respectively.
Margate Royal Sea Bathing Hospital, &c.—H.S. At rate of £200.
Middlesbrough Education Committee.—Sen. Asst. School M.O. £500.
Northampton General Hospital.—Hon. Asst. Physician.
Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.
Plymouth, Central Hospital.—H.S. £130.
Poole, Dorset, Cornelia and East Dorset Hospital.—H.S. At rate of £150.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal London Ophthalmic Hospital, City-road, E.C.—Out-Patient Officer. £100.
St. George's Hospital, S.W.—Asst. Ophth. Surgeon.
St. Mark's Hospital for Cancer, City-road, E.C.—Res. Surg. O. £150.
St. Mark's Hospital for Fistula, Cancer &c., City-road, E.C.—Two Anæsthetists. Each £25.
Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.
Sheffield Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £80.
South Shields, Harton Hospital.—Two H.S.'s. Each £150.
Wallasey, Victoria Central Hospital.—Jun. H.S. At rate of £100.
Wigan, Royal Infirmary.—Third H.S. At rate of £150.
Willesden General Hospital, N.W.—Registrars.
Worcester, County and City Mental Hospital, Powick.—Jun. Asst. M.O. £350.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Breage (Cornwall); Knighton (Radnor); Llangennech (Carmarthenshire); Sudbury (Suffolk); and at Tewkesbury (Glos.).

The Home Secretary is considering the question of appointing an additional Medical Referee under the Workmen's Compensation Act for the Falkirk district of the Sheriffdom of Stirling, Dumbarton, and Clackmannan. Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W.1, not later than Feb. 3rd.

PAULTON ISOLATION HOSPITAL.—Last week Mr. F. Gould, M.P. opened a Joint Isolation Hospital at Paulton, Somerset. The hospital, which has cost £13,400, will serve the needs of several rural and urban districts.

NOTES, COMMENTS, AND ABSTRACTS

TROPICAL DISEASE IN LIBERIA.

LIBERIA, a rich country, constitutes at present the one totally unexplored stretch of West Africa. This Negro Republic was founded as an American Colony about 110 years ago, and since the Treaty of Versailles the United States has been acting as its adviser in Liberian affairs. A report of the Commission appointed to inquire into the existence of slavery in the native West African Republic has just appeared, and exposes a condition of misgovernment which it is certain will not be allowed to continue now that public attention has been called to the horrible facts. The abuses whose existence is thus revealed have been suspected for a long time, and have been hinted at by at least one well-known writer, but as a matter of fact very little is known about the interior of Liberia, and Americo-Liberians, who form the ruling section of the Republic, would appear to be unable to penetrate further than 30 miles from the coast under some legal restrictions.

Some of this unfortunate ignorance will be dissipated by the generosity of the department of Tropical Medicine and Institute of Tropical Biology of Harvard University, for there has now appeared issued by that Department a magnificent account of an expedition working in 1926–27 in the African Republic and inquiring into the incidence of tropical disease. The members of the expedition were Prof. Richard P. Strong, Professor of Tropical Medicine in the Harvard Medical School, and Drs. Glover M. Allen, Joseph C. Bequaert, Harold J. Coolidge, David H. Linder, George C. Shattuck, Max Theiler, and Loring Whitman. Their observations and notes on the material collected have been ably edited by Prof. Strong.[1]

Many are familiar with the work of the Department of Tropical Medicine of Harvard University, and with the results of former expeditions to South America under the leadership of Prof. Strong, so that the appearance of these two particularly fine octavo volumes, dealing with analogous activity in Liberia, will be welcomed with appreciation. The two volumes, totalling 1052 pages, are replete with close print and furnished with nine maps and 476 photographic figures, of which 15 are in colour; there are also 28 text-figures presented for study. It is particularly appropriate that the work should be dedicated to Harvey S. Firestone as the man who has done so much for the development of the country and for the welfare of its inhabitants. Mr. Firestone has acquired a 99 years lease of a million acres of land upon which to develop the growth of rubber, and it is unthinkable that such operations should proceed without due attention to the findings of the recent Commission.

ROUTE, CLIMATE AND CONDITIONS.

The observations here recorded were made both along the sea-coast and in the interior. The country was crossed in three directions and investigations were carried out on the way from base camps established at strategic points. No trustworthy maps of the hinterland of Liberia were in existence. The greater part of the country has not been accurately surveyed from a geographical standpoint, and the maps already published are grossly inadequate and inaccurate. Consequently the maps in this report, compiled mainly by the energy of the Firestone Company and that of the expedition, may be taken as authoritative of the country at present. Investigations in Liberia being completed, the route travelled by the expedition across Africa was through the Belgian Congo, following the course of the Congo River and the Lualaba to Kabalo. From Kabalo the expedition proceeded by rail to Albertville on Lake Tanganyika and thence travelled north-east to Kigoma, Lakes Kivu and Edward, the Semliki Valley, Kivu and the Ituri forest. In all some 1500 miles were done on foot along trails and incompleted roads. Finally the party reached Entebbe on Lake Victoria.

The climate on the Liberian Coast is insalubrious, mainly due to the combination of excessive humidity with continuous, but not excessive, heat. At nine o'clock in the morning it is unpleasant to walk, one perspires throughout the day, even in the house. The towns on the coast have an average temperature of 76° F. to 80° F. and a seasonal variation of a very few degrees, making them unpleasant places of residence for unseasoned visitors, but the interior of the country is more salubrious. The conditions in the forests of Liberia have remained practically unchanged during the last fifty years since Stanley first opened up Central Africa to the white man, so that the success of this expedition of eight Americans, who spent almost a year in tropical Africa, in remaining free from tropical disease, once more demonstrates that in any parts of the dark continent white man can travel and not succumb to disease, provided that necessary hygienic precautions are taken. Much thought and continued care were necessary in exercising the proper precautions. The prophylactic use of quinine was considered necessary. True, it has been amply demonstrated that malaria infection cannot be prevented, even if as much as 1 gramme of quinine is taken daily, yet the members of the expedition are convinced that it masks a number of infections, eliminates some, and definitely modifies the virulence of others. In short, it materially influenced the efficiency of the expedition by its influence upon malaria.

THE TROPICAL SCOURGES.

The first volume deals with the diseases chiefly encountered in Liberia—malaria, blackwater fever, filariasis, onchocerciasis, juxta-articular nodules, schistosomiasis, leprosy, yaws, syphilis, granulomatous and parasitic conditions of the skin, ainhum, intestinal parasitism, amœbic dysentery, tuberculosis and diseases of the genital organs, notably gonorrhœa. Bacillary dysentery, typhoid fever, trypanosomiasis, yellow fever, and nutritional disturbances are rarer, whilst bubonic plague and relapsing fever are seldom found.

With particular regard to malaria, Dr. Shattuck concluded from his clinical studies that splenic enlargement does not seem to be a reliable indication of the disease in Liberia. Non-enlargement of the spleen does not exclude malaria, while splenomegaly is not uncommon in association with a negative blood examination. In only 4·7 per cent. was it definitely enlarged, which is a particularly low rate as compared to what prevails in Amazonia. In one case the diagnosis was lymphatic leukæmia, in a second schistosomiasis. The existence of a separate disease *Splenomegalia mycotica* is discussed, but considered problematical. No cases of yellow fever occurred whilst the expedition was in the country, although six had been reported shortly before their arrival. Schistosomiasis does not appear to be uncommon in Liberia and the eggs of *S. hæmatobium* were found in the urine in one case, and the lateral-spined *S. mansoni* in the fæces. In one instance the eggs of *S. hæmatobium* were present in fæces and those of *S. mansoni* in urine. Filariasis is prevalent both upon the coast and in the interior. At Gbanga in a series of 105 natives examined, *Filaria bancrofti* was found in two instances, *A. perstans* in one, and *Loa loa* in one.

Culicoides grahami, one of the insect vectors of *A. perstans*, was found inland and in the Belgian

[1] The African Republic of Liberia and the Belgian Congo. Based on observations made and material collected during the Harvard African Expedition, 1926–1927. In two volumes. Cambridge: Harvard University Press. 1930. $15 a set.

Congo. It was not, however, very abundant during the time the expedition was in the country. Elephantiasis, particularly of the lower extremities and scrotum, was found to be common, more especially amongst the adult Krus. Verrucose papillomatosis of the skin presented such a striking appearance that it might be confused with "mossy foot"! In a cystic tumour of the forearm removed by Dr. C. C. Chesterman on the Upper Congo, an adult *Loa loa*, 5 cm. in length, lying free in the fluid was demonstrated. Curious to relate the guinea-worm is not common. Infection with *Onchocerca volvulus* was first observed in the interior at an altitude of 900 ft. In the same region numbers of *Simulium damnosum* occurred and in dissections of adult flies caught near a village, developmental forms of onchocerca were successfully demonstrated. Histological studies of onchocerca tumours revealed spindle-shaped cells suggestive of fibrosarcoma. It was further observed that African subjects of these tumours are very liable to keloid formations, of which some remarkable illustrations are given.

The ætiology of that curious condition known as juxta-articular nodules, which appears to be fairly common, was carefully studied and a minute investigation of the cellular pathology made. It seemed probable that these growths originated from some form of mechanical irritation, just as other true neoplasms may, and that in some instances they were onchocercal in origin, in others frambœsial or syphilitic. It is pointed out, however, that the disease is rare in white people, in whom only 25 cases have been reported, while a few have been found in individuals who have never been outside Europe. Syphilis and yaws, grouped under the convenient generalisation—treponemiasis—claimed a great deal of attention. Regarding the vexed question of their identity, the observers have been unable to add any considerable additional knowledge. They consider themselves justified in regarding yaws as an attenuated virus of syphilis, less virulent in producing a disease modified by the portal of entry through many years of successive passage via the epidermis of black skinned races, and by the habits of these people plus the climatic and hygienic conditions under which they live. Other chapters deal with the terrible disfiguration known as gangosa and rhinopharyngitis mutilans—possibly also spirochætal infections. Goundou was seen in children in whom it formed striking paranasal lesions and leprosy occurred associated with dermal moniliasis. One case of sporotrichosis was discovered and the blastomycotic elements demonstrated in sections of the skin. Other fungous invasions of the epidermis were studied in the same manner and are well illustrated by sections removed at biopsy. Under other pathological conditions are grouped neoplasms, tuberculosis, and trypanosomiasis, the latter being very rare in Liberia was studied on the upper reaches of the Congo.

A chapter is devoted to plant parasitic diseases, another, and a very considerable one, to similar infections of wild animals, mainly game shot in Congo Ituri District. In a section on some parasitic helminths collected by the expedition, J. H. Sandground has made a very considerable contribution to animal helminthology, while in addition a new species *Tylenchus alatus* is described from the root of young cinchona plants. Special protozoological studies of the blood with two finely coloured plates are from the pen of Max Theiler. The botanical report by D. H. Linder is sound and informing.

The second volume consists entirely of pure zoology and is a record of the mammals, birds, reptiles, and amphibians collected in Liberia and on the Congo, while it is hardly surprising to note that the very complete account of entomology occupies more than half the volume.

There is no doubt that the labours of this Harvard Expedition will re-echo in many other departments of science and will form a record which will be consulted by specialists for many years to come.

NEW PREPARATIONS.

SEDICYL (from the Dr. Joachim Wiernik and Co. Chemical Works in Berlin. Agents, Coates and Cooper, 41, Great Tower-street, London).—We have received a specimen of this choline derivative which has recently been used in Germany in gynæcology, previous experimental work on rats having shown that the substance influences the correlation disturbances of the climacterium, and exerts a physiological action on the nervous system, as evidenced by its value in face of such symptoms as giddiness, headache, and palpitation. The manufacturers state that it is absolutely harmless, and can be used for prolonged treatments without any undesirable after-effects. It is put up in tubes of 25 tablets each, and the dosage is one or two tablets three times daily with a subsequent reduction to two tablets per day, when the substance will still exert its effect.

DIMOL PESSARIES (Dimol Laboratories, Ltd., 40, Ludgate-hill, London; Distributing Agents, Messrs. Sangers, 258, Euston-road, London) is a new Dimol preparation, the gelatin pessaries being guaranteed to contain individually the equivalent in bactericidal action to half a drachm of pure carbolic acid, while the claim that they are free from any untoward action on the mucosa is a recommendation to their use in midwifery and gynæcology. The pessaries are put up in cartons containing one dozen in each.

EPHEDRINE: Nasal Jelly, Inhalant Compound, and Throat Spray.—We have received from British Drug Houses, Ltd., Graham-street, City-road, London, samples of these three forms of B.D.H. ephedrine, the alkaloid from the Chinese plant, Ma Huang, being made by a special process to which the firm attach particular importance. The nasal jelly, which is put up in collapsible tubes, is composed of ephedrine in pure soft petroleum; the inhalant is a solution of the drug in liquid paraffin with menthol, camphor, and oil of thyme; and the throat spray is an aqueous solution of the hydrochloride of ephedrine with chlorbutal. Ephedrine is, of course, similar in action to adrenalin, the circulatory stimulation being marked. The different salts have proved useful in the treatment of certain types of asthma, in hay-fever, and congestion of the nasal mucous membrane.

Births, Marriages, and Deaths

MARRIAGES.

MAY—KAYE.—On Jan. 3rd, at Holy Trinity Church, Brompton-road, Richard W. L. May, M.A., M.B., B.Ch., of Eton, Windsor, to Winifred, only child of Mr. and Mrs. Kaye, of Hatfield, Hendon-lane, N.

THOMAS—THOMAS.—On Jan. 6th, at the Parish Church, Risca, William Evans Thomas, M.D., J.P., of Llys-y-graig, Ystrad, to Catherine Elizabeth, widow of D. J. Thomas, M.R.C.S., J.P., of The Rhyl, Porthcawl.

WAY—SCOTT FOSTER.—On Jan. 9th, Montague Way, J.P., M.R.C.S., L.R.C.P., to Margaret, youngest daugher of the late Sir Scott Foster, J.P.

DEATHS.

ABBOTT.—On Jan. 11th, at Lake House, Wrightington, Lancs, after a long illness, Dr. Frederic William Abbott, formerly of Balham and Christchurch, in his 68th year.

CLARK.—On Jan. 7th, at his residence, Great George's-road, Waterloo, near Liverpool, John Barclay Clark, M.D., C.M. Edin., aged 90 years.

MANSEL.—On Jan. 8th, at Brentwood, Essex, Charles John Linskill Mansel, O.B.E., M.D.

O'HERLIHY.—On Jan. 9th, at Monte Carlo, Dr. Cornelius O'Herlihy, of Inniscarra, Co. Cork, aged 47.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1930.

THE Index and Title-page to Vol. II., 1930, which was completed with the issue of Dec. 27th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.